

THE MARINE REVIEW

VOL. 38.

CLEVELAND, DECEMBER 10, 1908.

NEW YORK

No. 24

NEW GERMAN-CANADIAN SERVICE.

The lower grain freight rates which prevailed the past season in favor of the Montreal route as against United States Atlantic ports has had the effect of prompting the establishment of a new freight and passenger service between Canada and Germany.

G. M. Bosworth, one of the vice presidents of the Canadian Pacific railway, has completed negotiations with Herr Ballin, managing director of the Hamburg-Amerika steamship lines, by which the service will be established by March or April, 1909. Mr. Bosworth says:

"We have always been anxious to see a direct line of steamers running between Hamburg and Montreal. At one time we had some idea of putting our own steamers into the service, but now that the Hamburg-Amerika line have decided to put on a first-class line of passenger and cargo steamers between the ports of Hamburg, Bremen and Rotterdam and Canada, we have decided that this will answer every purpose so far as the Canadian Pacific railway is concerned.

"There is considerable business for the German ports from the United States and Canada, and in this the Canadian Pacific railway has not been able to share to any extent, owing to the fact that we had not the necessary steamship line from Montreal. We consider that the establishment of this new German line will go a long way toward developing the trade between Canada and Germany, and that without affecting the interests of Great Britain in the slightest degree."

Archer Baker, European manager of the Canadian Pacific railway, has stated that the new line will deal with purely continental traffic which does not and

cannot go through British ports. He also says that "the result of the Canadian surtax on German goods has had the effect of decreasing exports from Germany to Canada, and it may be that the putting on of this line will have the effect of improving the relations between the two countries. You may ask why do we select the Hamburg-Amerika line in place of the North German Lloyd. The answer is very simple—this is a joint service between the two. This line will afford an easy means for emigration from Germany to Canada. Emigration dragged last year from various causes. The government rather discouraged it in the spring, imposing certain restrictions—for instance, that a man entering the country should have £5 in his pocket, their reason being that the financial trouble in America had reacted on Canada, and that the labor market was overstocked. The financial conditions have now greatly improved, and there is plenty of room for immigrants in Canada. We hope by the new line to divert many from the United States to the Dominion. We want agriculturists."

MORSE LINES REORGANIZED.

A holding company was organized at Portland, Me., on Nov. 24 to take over the four lines of steamships running southward from New York which had of late been under the control of Charles W. Morse's Consolidated Steamship lines.

The company is to be known as the Atlantic, Gulf & West Indies Steamship lines and the incorporators and directors are Henry P. Booth, New York; Henry Hornblower, Boston; Henry R. Mallory, New York; A. R. Nicol, New York, and Galen L. Stone, Boston. The certificate of incorpora-

tion provides that the capital stock of the company shall be \$40,000,000 par value, of which \$20,000,000 shall be non-cumulative preferred stock and \$20,000,000 shall be common stock. The corporation was organized by the election of Henry R. Mallory as president and A. R. Nicol as treasurer.

The new company is assured of substantial financial backing by Boston bankers. It will consist of four of the six lines which Mr. Morse controlled, namely, the Ward, Clyde, Mallory and New York & Porto Rico. The remaining two Morse lines, the Eastern Steamship Co. and the Metropolitan Steamship Co., are to remain under separate management for a time at least.

The reorganization committee found that there was outstanding \$62,000,000 of 4 per cent bonds of the Consolidated company held by more than 1,000 companies, firms and individuals. A floating debt of \$2,400,000 also had to be financed. A month ago the committee obtained the approval of 97 per cent of the old bondholders, and the project was secure.

The old bondholders are to receive for their holdings 25 per cent in the 5 per cent bonds of the new company, 25 per cent in the preferred stock, and 12½ per cent in common stock, the balance, 37½ per cent, being a total loss. The bondholders, however, put their original holdings of stock in the subsidiary companies on a basis of 25 cents on the dollar, so that their loss will not be large. The non-assenting bondholders will be paid off in cash at a price to be fixed by the court.

The new company starts with a clear sheet. It has no floating debt and no interest charges until 1910. The old floating debt of \$2,400,000 is taken care of by the issuance of short-time notes,

which become due semi-annually, and of the total amount \$600,000 have been taken by the bondholders and the balance by Boston banks and bankers. The first batch of these notes become due Jan. 1, 1909, and the last a year from that time.

It is expected that the new company will be in active working operation by Dec. 15, with headquarters in New York.

JAMES J. HILL ON WATERWAYS.

It is the opinion of Mr. James J. Hill that railway building has about reached its limit for the present. For the next few years capitalists will devote their resources to bettering existing systems, adding to the rolling stock and freight houses and improving the trackage in order to be able to handle all of the traffic originating in the territory which they serve.

During the last 10 years production has increased 126 per cent and railroad facilities for handling it only 22 per cent. To continue to stretch thin lines of track into developing territory will not materially meet the needs for hauling. Capital cannot build fast enough nor well enough to keep pace with production. What is required is adequate development of the main arteries of commerce, the trunk lines and the turning of attention back to a readier mode of transportation—water.

Mr. Hill says:

"Given a good channel and a good craft, no form of transportation can compete with water-borne traffic." It is a fact that no country on the globe has more or better natural waterways and harbors than this; nor has any government done less to improve them. We are only now awakening to our opportunity for relief."

SHOULD EXCLUDE US.

That Premier Asquith's plan for what is known as a two power navy for England is not meeting with entire approbation is evident by the tenor of a strongly worded argument in the London *Nation* of Nov. 27.

Premier Asquith has announced that he intends to bar no nation in the calculation of the strength of the British navy, so as to make it exceed by 10 per cent the strength of the combined navies of any two other powers. In respect to this policy *The Nation* says that America and Germany are the next strongest naval powers after Great Britain. America, it explains, has practically to build two navies, one for the Atlantic and one for the Pacific. "A people of 40,000,000." *The*

Nation continues, "is called upon to provide a force stronger than that levied on 140,000,000 people. On this proposition we have two remarks to make; the first is that the people of Great Britain cannot do it and the second that the Liberal party will not try to do it. They never will consent to build against America; it is hateful of the Liberals even to think of building against the United States."

REPORT OF BUREAU OF YARDS AND DOCKS.

Rear Admiral R. C. Holliday, chief of the Bureau of Yards and Docks, says in his annual report that at the Boston navy yard during the fiscal year \$318,545.70 were spent, divided as follows: Public works \$162,530.61, repairs and preservation \$35,483.85, maintenance \$107,267.11, contingencies \$1,309.01, civil establishment \$11,955.12.

At the Portsmouth navy yard the total expenditures during the year were \$703,210.59, divided as follows: Public works \$551,871.65, repairs and preservation \$35,796.80, maintenance \$100,639.89, contingencies \$1,228.74, civil establishment \$13,673.50.

Admiral Holliday's report contains considerable matter regarding the yards at Boston and Portsmouth. Among the improvements at Boston were the laying of underground conduits, telephone extensions, timber drydocks were improved, the power plant consolidated, sanitary improvements, extending sewer, railroad and fire protection systems, paving, dredging, extension of heating systems, improving various buildings. Drydock No. 1 was repaired by replacing about 600 large stones that had been damaged or loosened by the frost and many improvements of minor importance in various parts of the yard were completed. For repairs and preservation of yard buildings and quarters, water-front improvements, drydock caisson, power plant, electric distributing system and telegraph and telephone systems over \$35,000 was spent. Maintenance of live stock, operation of power plants, care of grounds, purchase of water, pay of watchmen and office force, pay of men on leave and lighting ships cost over \$107,000.

Admiral Holliday submits a number of estimates for appropriations to carry on various works at the Boston and Portsmouth yards. Among those at the Boston yard is an estimate of \$145,000 for extending the power plant, including the following items: Two 450 H. P. boilers and accessories, 5,000 cu. ft. air compressor, 2,000 kw. turbo-generator, etc. An appropriation of \$5,000 for dredging around piers

and slips, where the tidal currents make material silt into the channels, is asked. An item of \$2,500 is submitted for reconstructing some of the sewers in the yard and connecting others with the metropolitan system of Boston.

Improvements to the water front at the Boston yard are declared to be necessary by Admiral Holliday, at a cost of \$100,000. These improvements include the reconstruction of piers 1, 8 and 10, which are in a bad condition; also the construction of a slip between pier No. 2 and drydock No. 2, and a new pier to serve as an approach to drydock No. 3. The rope walk is said to be inadequately protected from fire and in order to improve this condition of affairs an appropriation of \$10,000 is asked. Admiral Holliday also suggests that the naval prison be extended by adding a new wing to provide space for a mess kitchen, office, sick bay containing 10 halls, dispensary and three rooms for a permanent guard of 60 marines. The total appropriation asked in the report for public works at the Boston yard is \$267,500.

The old frigate *Constitution* has been found in need of repairs. The sum of \$100,000 was spent in the restoration of the vessel after the agitation some time ago as to whether or not she should be disposed of. The vessel has recently been surveyed, with the result that it was found that minor repairs to the extent of nearly \$4,000 are necessary to protect the structure from the effects of the weather.

AMUNDSEN'S SLOOP TO BE SOLD.

The Norwegian consul at San Francisco, Capt. Henry Lund, recently received instructions from Capt. Ronald Amundsen, the Arctic explorer, to sell at auction the sloop *Gjoa*, in which Capt. Amundsen made his now famous voyage of discovery through the Northwest Passage.

The sloop has lain at the Mare Island navy yard ever since the explorer returned from his eventful voyage.

Capt. Lund, who is a personal friend of Capt. Amundsen, has also stated that it is the intention of the latter to outfit at San Francisco before starting on the voyage which he plans to make in search of the geographical North Pole in the steamer *Fram*.

The *Fram* is the vessel used by Capt. Hansen and is the property of the Norwegian government. Capt. Amundsen purposes to cruise to the Siberian islands and thence to the unknown waters to the northward.

SHIP YARD NOTES.

O. A. Ham, of Mahone Bay, N. S., has contracts for a large motor boat and for a large yacht, the latter to the order of Herbert Brookfield, of Halifax, N. S.

J. N. Rafuse, ship builder at Conquerall Bank, N. S., has received a contract from Capt. Freeman Himmelman for the construction of a large-sized fishing schooner.

The Harlan & Hollingsworth Corp., Wilmington, Del., has been awarded contract for effecting repairs to light vessel No. 79 at a cost of \$777.26.

Kruse & Banks, Coos Bay, Ore., have been awarded contract for building two car floats for the Pacific Railway Co., to be 272 ft. in length over all, 39 ft. wide and 12 ft. 6 in. deep.

The United Engineering Works, Alameda, Cal., launched the new steamer Inspector, built for the United States immigration bureau for the use of its inspectors at San Francisco, on Nov. 26.

The Bath Iron Works, Bath, Me., has nearly completed the erection of a new boiler shop built to replace the one destroyed by fire. The new building is one of the finest of its kind on that coast.

The Willamette Iron & Steel Works, of Portland, Ore., have received a contract for building machinery and boilers for a light draught steamer which is to be built for the Northern Navigation Co., for service in Alaskan waters.

The James Clark Co., Baltimore, Md., has now under construction the engine and boiler for the menhaden fishing steamer now being built by M. Mitchell Davis & Son, at Solomons, Md., for the Hinton-Tolson Guano Co., of Reedville, Va.

The Harlan & Hollingsworth Corp., Wilmington, Del., launched the steel frame freight lighter Keyport, Nov. 23. The Keyport is the third of the 150-ft. vessels to be built by this company for the Central Railroad of New Jersey.

Joseph Supple, Portland, Ore., has contracts for the construction of three steamers of light draught for the Katala Co., of Seattle, to be used on the Copper river, in Alaska. The machinery for these vessels will probably be built by the Willamette Iron & Steel Works, of Portland.

The Smith & Barry Co., of New London, Conn., is a new incorporation having for its purpose the building of boats and the manufacture of sails. Charles H. Smith is president, Frank E. Williams, secretary and

treasurer, and Jane F. Williams and Carlos Barry, directors.

M. Mitchell Davis & Son, Solomons, Md., have a contract for building the hull of a menhaden fishing steamer for the Hinton-Tolson Guano Co., of Reedville, Va. The vessel is to be 135 ft. long, 22 ft. beam and 11 ft. deep and is to be ready for delivery in the spring. The machinery is being constructed by the James Clark Co., of Baltimore.

M. Mitchell Davis & Son, Solomons, Md., have in hand a tugboat for A. J. Taylor & Bro., of Washington, D. C., which is 115 ft. long, 22 ft. beam and 13 ft. deep. This same concern is building two small yachts and is also rebuilding the freight and passenger steamer Cameron, owned by Robert Cameron, Worton, Md., she being lengthened 12 ft. and extensively repaired.

The Craig Ship Building Co., Long Beach, Cal., launched the steel dredger building for the Western Marine Dredging Co., on Nov. 14. The machinery at present in the electrical dredger of the Los Angeles Dock & Terminal Co. is to be fitted to the new vessel, which is to be employed in cutting out the ocean entrance to Long Beach harbor.

Bids received by the light house inspector at Philadelphia, for repairing light vessel No. 79, were as follows: Harlan & Hollingsworth Corp., Wilmington, Del., \$777.26, accepted; Kensington Ship Yard Co., Philadelphia, \$811.50; Quigley, Davis & Dorp, Camden, N. J., \$810; Pusey & Jones, Wilmington, Del., \$918.

Bids for repairing the light house tender Goldenrod, opened by the lighthouse inspector at Cincinnati, O., recently, were as follows: Johnson Iron Works, Ltd., New Orleans, La., \$7,000; Howard Ship Yards Co., Jeffersonville, Ind., \$9,944 and \$11,744. The bid of the Johnson Iron Works Co. was accepted.

The lighthouse inspector at Boston, Mass., received the following bids on Nov. 9 for making repairs to light vessel No. 86: R. T. Green Co., Chelsea, Mass., \$1,086; Bertelsen & Peterson Engineering Co., E. Boston, Mass., \$1,138; New Bedford Boiler & Machine Co., New Bedford, Mass., \$1,158; Lockwood Mfg. Co., E. Boston, Mass., \$1,248; P. F. Wood Boiler Works, New Bedford, Mass., \$1,328.50.

W. A. Boole & Son, San Francisco, Cal., are to make the repairs to the steamship Norwood, damaged in collision with the steamship A-uncion. Bids for the repairs were as follows:

W. A. Boole & Son, \$11,800; John W. Dickie & Son, \$10,400, hull only; Union Iron Works, \$12,100, hull, \$8,450, machinery, \$3,650; Pacific Ship Yard & Ways, \$19,000; United Engineering Works, \$16,800. All the bidders have their works at San Francisco.

Philip Sloan, the Seattle, Wash., ship builder, is progressing rapidly in the construction of the new steamer Vashonian, building for the Harrington Steamboat Co., and also has two barges nearing completion for the Drummond Lighterage Co. They are 83 ft. long, 26 ft. beam and 7 ft. deep. Besides this, Mr. Sloan has contracts for four more barges, and is soon to lengthen the old stern-wheel steamer Vashon 18 ft. and install new engines.

The New York Ship Building Co., Camden, N. J., has been awarded contract by the Hudson River Day Line for the construction of a steamer to replace its steamer New York, recently burned at Newburgh. The new vessel will be 8 ft. longer than the New York, being designed for a length of 350 ft., beam of 40 ft., and depth of hull of 12 ft. The new vessel is to be arranged and equipped similarly to the Hendrick Hudson of the same line. She will be christened Robert Fulton.

Bids received by the lighthouse inspector at Portland, Me., on Nov. 12, for making repairs to light vessel No. 74, were as follows: Bertelson & Peterson Engineering Co., Boston, Mass., \$3,624, accepted; Richard T. Green & Co., Boston, Mass., \$3,771; Joseph C. Noyes, Portland, Me., \$3,898; Portland Ship Supply Co., Portland, Me., \$4,730; Fore River Ship Building Co., Quincy, Mass., \$3,282.50. The last named company's bid was not in accordance with specifications.

The Shooter Island Ship Yard Co., Shooter Island, N. Y., recently completed a record job in repairs to the Standard Oil Co.'s ship Astral, which was dismasted in a hurricane on Oct. 4 and towed into New York Oct. 15. The contract called for the delivery of the vessel to her owners on Nov. 21, and on Nov. 19, 25 days after commencing the work, without allowing for two days of bad weather, the job was completed. It included the largest sail making order ever executed in New York, cutting and bending a total sail area of 43,390 sq. ft. of canvas, and requiring some 12,000 fathoms of manila rope, all of which was done entirely by the employes of the Shooter Island Ship Yard Co.

ITEMS OF GENERAL INTEREST.

The state of Montana presented to its big armored cruiser namesake a silver service of 34 pieces at Norfolk, Va., Nov. 11. The presentation of the service was made by Judge Theodore Brantly, chief justice of Montana. The silver is valued at \$5,000 and was purchased by popular subscription among the residents of Montana.

The vessels of the Hamburg-American line heretofore calling at Havana, Vera Cruz and Tampico are now including the port of Coatzacoalcas, Mexico, in their itinerary. This would seem to indicate that considerable traffic will be inaugurated with Pacific coast countries in connection with South American steamship lines via the Isthmus of Tehuantepec. The Royal Mail Steam Packet Co. is also to make Coatzacoalcas a port of call.

At a demonstration given at Hull in honor of Sir Wilfred Laurier, the premier stated in a speech that if Canada's revenue continued to increase at the present rate the construction of the Georgian Bay canal would be commenced immediately after the completion of the National Transcontinental Railway. He admitted that he had become a convert to the necessity of the canal and that the government had in view the further development of the great waterways of Canada.

Secretary of the Navy Newberry has approved of both the site and the plans for the big naval dry dock at Pearl Harbor, Hawaii, and construction at this naval base is to begin at once. The dock is to be built of concrete for the most part and will be 1,110 ft. long, 110 ft. wide and 35 ft. deep on the sill, large enough to accommodate the largest vessel in the navy as well as being calculated for even larger vessels to be built. The cost is to be in the neighborhood of \$6,000,000.

The Cunard Line has leased new piers 53, 54 and 56 at New York and the Lusitania on her last trip made the first landing in the new location, using pier 56, at the foot of West Fifteenth street. The International Mercantile Marine Co. has leased piers 58 to 62 inclusive and the French line has taken No. 57. The work on these new piers was begun four years ago and they have been constructed at a cost of \$215,000 each. They are 825 ft. long and 100 ft. wide with double deck iron superstructures.

Rapid progress is being made on the construction of the inland waterway which is being constructed be-

tween the beaches and the mainland from Cape May to Bay Head by the state of New Jersey. Nearly five miles of the work from Cape May northward have been completed by the American Dredging Co. under the supervision of Mr. Henry J. Sherman, of Burlington, N. J., chief engineer of the work. The waterway is one of the favorite measures of Gov. Fort and it is expected that the cost to the state will aggregate \$150,000.

Sir John Ellerman, controlling owner of the Ellerman, City and Hall lines and other steamship tonnage, has completed negotiations with the Bucknall Steamship lines whereby the entire fleet of the latter company, consisting of 28 vessels, is to pass to the management of Sir John Ellerman. While the scheme must be submitted to the shareholders of the Bucknall lines it is expected that it will readily be approved. Sir John will then be in control of 112 steamers with a total tonnage of 430,000.

The Isthmian canal commission is soon to ask for bids for furnishing seven marine boilers for rock and sand barges, for floating equipment to provide steam for towing machines and anchor windlasses. The boilers are to be single and Scotch marine type, 8 ft. in diameter and 8 ft. 6 in. long. Each is to be fitted with Morrison corrugated furnace. Other particulars may be had when the specifications are issued.

The Preussen, the largest and fastest sailing ship in the world, has recently concluded a remarkable passage from New York to Yokohama, sailing from New York on May 27 last, and reaching Yokohama Sept. 16, 112 days out. Her commander believes this to be the quickest voyage ever made between the two ports by a sailing vessel via the eastward passage. The Preussen was chartered by Funch, Edye & Co., and carried a cargo for the Standard Oil Co.

President Roosevelt is reported to be determined to push his program of four battleships a year in the coming congress, and he is convinced that a subsidy for ocean liners will give the navy faster and larger vessels for use in time of war than can be obtained by building. This view is sustained by many officers in the navy, who are of the opinion that the swift scout cruisers of the type of the Salem, Birmingham and Chester will not behave so well in heavy weather as would merchant vessels of the type of the Mauretania and Lusitania. It is probable that these sentiments will be incorporated in the president's an-

nual message, which will present a striking contrast to the refusal of Secretary of the Navy Metcalf to ask for an authorization for additional men for the navy, which he announces is due to the administration's desire for economy.

The fireboats of the city of New York are given opportunity occasionally to execute fleet maneuvers. Last week 10 of these vessels participated in a drill of this sort in which they went through a series of evolutions in single and double column formation, afterwards passing around the battery with every hose pipe working. At the time of the maneuvers further tests were made of the city's new high pressure system which proved its efficiency completely.

More than 100 persons lost their lives in the burning of the Ellerman line steamer Sardinia off Valetta, Island of Malta, on Nov. 25. The Sardinia was bound from Liverpool to Alexandria. Capt. Charles Littler and his crew of 44 Englishmen behaved with admirable courage, the former perishing at his post along with the first officer, all three engineers, and two first class passengers. A large number of Arab pilgrims were aboard, among whom there was heavy loss of life.

The wrecked steamer Pomona, which has lain on a reef off Fort Ross, on the California coast, since last March, and upon which the Coast Wrecking Co. had expended considerable sums in an effort to raise her, has succumbed to a succession of big seas and is now broken in two. Further attempts to save her are out of the question. The Pomona belonged to the Pacific Coast Steamship Co., but was abandoned to the underwriters after the accident. Lloyds subsequently contracted with the wrecking company to raise the steamer.

The Maritime Association of the Port of New York has announced its annual banquet, which is to occur Jan. 23, 1909, at the Waldorf-Astoria. Addresses will be given by many prominent speakers whose names will be announced later. The committee on banquet this year is constituted as follows: William D. Dickey, chairman; Amos D. Carver, treasurer; Frederick Bolander, secretary; Franklin D. Mooney, J. Raymond Smith, William H. R. Killeen, C. H. Callaghan, Alexander S. Murphy, Andrew M. Campbell, Jonathan Moore, Edgar F. Luckenbach, Grosvenor B. Clarkson.

A memorial window to Admiral William T. Sampson was unveiled at the Naval Academy chapel at Annapolis on Nov. 21 by the two young

sons of the admiral, who are midshipmen at the academy, in the presence of a large gathering. The presentation address was made by Rear Admiral Chadwick, who commanded Sampson's flagship, the New York, while the battle of Santiago was in progress. The acceptance was made by Supt. Badger, of the academy, while the eulogy was delivered by Rear Admiral A. T. Mahan, a classmate of Admiral Sampson. The window is a handsome one, installed at a cost of several thousand dollars, which was subscribed by the officers and men of the navy.

Bids were opened last week for barge canal construction on three contracts. The first, known as 41, for work just east of Rochester; the second, known as 47, for work in Cayuga county, and contract 68 for construction of dams and locks in the Hudson river. On contract 41 there were 19 bidders. The firm of Butler Bros.-Huff Co. were the lowest bidders at \$281,330; on contract 47, Crowell & Sherman Co. of Cleveland was the lowest at \$1,262,638; and on 68 the Shanley-Morrissey Co. of New York were the lowest at \$1,018,323.

Good progress is being made in the efforts of Mr. John Arbuckle to save the stranded naval cruiser Yankee, which has been ashore on Hen and Chickens Reef, Buzzard's Bay, for several weeks. She has been well calked forward and much work has been done toward removing the cement which was poured into her false bottom by the government wreckers in their unsuccessful attempt to raise her. It is expected that it will be possible to turn on the compressed air, which is being relied upon to raise her, in about two weeks.

Business men of Tacoma, Wash., to the number of 100 have agreed to contribute \$5 a month in order that direct steamer communication may be maintained during the dull winter season between Tacoma, Bremerton, Port Orchard and West Pass ports. The Tacoma & Burton Navigation Co. has been running its steamer Magnolia in this service since last June, but now that the summer passenger traffic has ceased, the line could no longer be operated at a profit. The chamber of commerce of Tacoma believed that it would be unwise to permit the service to be abandoned and went about raising the necessary \$500 per month subsidy. This was easily accomplished and with the resumption of regular steamboat service bus-

iness with those ports is reported to be increasing rapidly.

The steamer Ligonea, which arrived at Boston recently, is reported to have been boarded by a tremendous wave while in the vicinity of the Diamond Shoal lightship, which deluged the forward deck of the vessel with hundreds of fish. The crew took up the fish in shovels, obtaining a large number of food fish, such as cod, hake and haddock.

A collision in New York bay between the fruit steamer Admiral Dewey and the fishing banks steamer Mount Desert precipitated a panic in which serious loss of life was narrowly averted. Most of the Mount Desert's passengers swarmed aboard the Admiral Dewey, which kept her prow in the hole in the Mount Desert until the frightened company had reached safety. The Mount Desert was able to proceed to her dock unaided.

The New York & New Orleans Steamship Co. is a new incorporation under the laws of New Jersey. It has a capital stock of \$1,000,000 divided into 10,000 \$100 shares and purposes to operate passenger and freight vessels between New York and New Orleans and other southern ports. The incorporators are: Frank P. McDermott, Carlyle Garrison and Henry A. Oetjen, and the registered office of the company is at 259 Washington street, Jersey City, N. J.

The twin-screw suction dredge Galveston, recently completed by the Maryland Steel Co. for the United States government, left Sparrow's Point last week for Galveston. The dredge is 304 ft. over all, 290 ft. between perpendiculars, 51 ft. beam and 27 ft. deep. She is propelled by two compound engines, 22 and 46 in. cylinder diameters by 30-in. stroke. The dredging machinery consists of two 20-in. suction pumps, each of which is driven by a compound engine, cylinders 17 and 36 in. diameter by 18-in. stroke. Steam is supplied by four Scotch boilers each 14 ft. 6 in. diameter and 12 ft. long, allowed 125 lbs. working pressure.

The navy department has made public the requirements for the new collier for which bids are being solicited. This vessel is to be a duplicate of the one to be built at the Mare Island navy yard, the specifications calling for a single deck vessel 530 ft. long, 65 ft. beam and 27 ft. 6 in. mean draught. In addition to the provision for storage of 12,500 tons of cargo and bunker coal it is required that

there shall be a space for carrying about 1,000 tons of fuel oil in bulk, with an additional cargo hold for carrying either coal or oil. The specifications also state that consideration will also be given to a design for the subsequent installation of apparatus for coaling at sea. The machinery is to comprise twin-screw, triple-expansion engines capable of furnishing a continuous sea speed of 14 knots. The personnel is to include eight commissioned officers, a boatswain, carpenter, three warrant machinists, pay clerk and crew of 150. Quarters for these must be provided. The ship is to be completed in 20 months.

At the recent meeting of the League of German Naval Architects at Charlottenburg, Dr. Anschuetzkaempfe, of Kiel, exhibited a compass without a magnetic needle. The compass is in the form of a gyroscope, which when suspended in a certain way always adjusts itself parallel to the earth's axis. The invention is of especial importance with regard to vessels built of iron or steel as the compass needle is constantly liable to the influence of adjacent metallic bodies.

The States railways of Italy, which have undertaken the passenger and mail service between the mainland of Italy and the outlying islands, are asking tenders for building several steamers. For the mail service between Naples and Palermo one fast turbine steamer will be built, for which tenders from abroad will be considered if received prior to Oct. 10. Two fast turbine steamers are also required for the service to Sardinia, three for the service to Sicily, and one small one for connecting the railway station at Venice with the opposite quay. These last six vessels may be built only by Italian contractors.

The Maryland Steel Co., Sparrow's Point, Md., has notified the navy department of its acceptance of the contract for building three new colliers for the United States navy, and work will at once be started. About 1,000 skilled artisans will be added to the already large force of 2,800 men now employed at this plant. Orders have been sent to the Pennsylvania Steel Co. to get out the plates and frames and the whole plant will now be very active, as the first collier must be delivered in 10 months, the second in 11 months, and the third in 12 months. As soon as drawings are completed the keels of the new vessels will be laid and visible work begun.

OBITUARY.

Capt. George W. Bone, who died in New York on Thursday, Nov. 12, as the result of an automobile accident, spent nearly all of the last 40 years of his life in Buffalo, where he rounded out as a vessel broker a very eventful life, especially as he had spent a good part of his younger days as a navigator of the lakes. He leaves no relatives in Buffalo and apparently no friends who are well enough acquainted with his career to reduce it to actual dates, but he was always well and favorably known and had many friends through the entire length and breadth of the lake trade, both among vessel owners and those who sailed, which in these later days form two much more separate classes than they did when he was the master of a vessel.

Perhaps the changes that have taken place in his day can be sufficiently set forth by recalling that he at one time sailed the bark J. B. Morrell, a class of vessel, with its two square-rigged masts and one schooner-rigged mast, that the present generation as a rule has never seen and which some of the older members of the lake trade can not describe.

Capt. Bone was born in Erie, Pa., 82 years ago, and it appears that his home was there until he came to Buffalo, either in 1870 or shortly before that year. Capt. William Graham, one of Capt. Bone's closest friends, said the other day that he, himself, was in business on Central wharf as a member of the firm of Chesley & Graham in 1870, and that Capt. Bone occupied a ship broker's office there at the time. These were the days when Central wharf meant Buffalo, so far as the lake trade went, and never an old lake man but regretted that it had to be given up early in the eighties on account of railroad encroachment, even though he may now occupy a much finer office up town.

The giving up of old Central wharf scattered forever what was a marine population through and through, so that it has never since had a rallying point and never will have one again. Capt. Bone, as did some others, clung to the vicinity of the foot of Main street awhile, then moved his office up town as others did. He was a very genial man and was never better occupied than when speaking of the days he had spent there and elsewhere in the service. For a long time he was the Buffalo manager of the Wilson Transit line and Capt.

Thomas Wilson was his firm friend as long as he lived.

Capt. Bone had a history to relate that very few of the lake men who dealt and hobnobbed with him could equal, for he had seen distinguished service in the Rebellion. Some time in 1862, if memory serves, there were built in Boston what were known as the 90-day gunboats, four of them for a special and very pressing use in the Gulf and Mississippi squadrons. Capt. Bone had just previous to that time enlisted in the navy and as his knowledge of ship building and navigation were both good, he was hurried away to Boston to take charge of some of this constructive work and when the gunboats were finished he sailed in one of them as an officer.

He was with Farragut at the battle of Mobile, where the warship Tecumseh struck a torpedo and went down in an instant, and he was afterwards detailed in command of a gunboat that did good service up the Mississippi and some of the side rivers, where fighting was plenty, and every day was a day of adventure.

At the close of the war Capt. Bone returned to Erie and remained in the government service for some time as the keeper of the land light, one of the best known beacons on the chain of lakes. He also sailed the lakes again and it was during this period that he received the injury which crippled one of his hands and made it entirely useless. One night when master of a lake vessel he was awakened by the flapping of the sails caused by the rising wind and on going to investigate he fell through a hatchway into the hold, where he would have died had not his groans been heard by some of the crew.

Capt. Bone gave up active business soon after the death of his wife, three or four years ago, and has since made his home with his descendants. His only child, the wife of Major J. T. Watson, of St. Louis, had long urged him to make her residence his home and it was with her or her children that he spent his last days. Her death occurred only a few days previous to his own. At the time of his death he was at the home of her daughter, Mrs. Charles P. Northrup, of New York, and he had spent his winters of late with another grandchild, George E. Watson, in New Orleans. These, with another grandchild, Mrs. Jesse S. Skinner, of St. Louis, being with their families his only surviving descendants.

J. W. C.

SLIGHT IMPROVEMENT IN STEERAGE TRAVEL.

The weekly report of the trans-Atlantic Passenger Conference, issued Nov. 19, indicates quite a dull condition of the steamship business. The outward bound steamers—from all Atlantic and Canadian ports—for the week carried only 717 first-class passengers and 1,281 second class. The outward steerage movement keeps up, however; 6,911 have left on the east-bound trip during the week.

In view of the improvement in industrial circles, there is a general disposition to watch closely the steamship figures for indications of a return of labor to this country. There is, practically speaking, no improvement in the return movement. The westbound movement exceeds the east-bound for the week by exactly 657 passengers—all ports included—which is not a particularly favorable showing. Among steamship people there is a disposition not to expect any very large inward movement of labor until the spring, but hopes are entertained that when the tide does set in in this direction it will make up for lost time.

Following are the figures showing the steamship passenger business for the week and for the calendar year, with comparisons:

PASSENGER BUSINESS FOR THE WEEK.			
	Westbound.	Eastbound.	
First class	1,297	717	
Second class	2,692	1,281	
Steerage	7,568	6,911	
WESTBOUND PASSENGER BUSINESS SINCE JAN. 1.			
	1908.	1907.	Decrease.
First class	86,697	99,176	9,497
Second class	153,478	212,265	58,787
Steerage	357,223	1,256,698	899,475
EASTBOUND PASSENGER BUSINESS SINCE JAN. 1.			
	1908.	1907.	Decrease.
First class	88,089	94,553	6,464
Second class	98,715	96,714	*2,001
Steerage	603,199	407,835	*200,364

*Increase.

NEW GRAVING DOCK AT HAMBURG.

The Stettiner Maschinenbau Actiengesellschaft Vulcan is reported to be about to begin the construction of a new large floating dock for use at their Hamburg ship building establishment.

The dock is to be built from designs prepared by Clark & Standfield, of Westminster, London, and is to be of the bolted sectional type, with a length over all of 723 ft., a width between the side walls of 106 ft., and a width at the deep draught lines of 116 ft. The pumping plant, which will be situated entirely on one wall, is to be capable of lifting a vessel of no less than 35,000 tons in five hours, it being the intention of the company that this dock shall be able to comfortably accommodate any vessel now afloat.

ATLANTIC COAST NOTES.

Office of the MARINE REVIEW,
Room 1005, No. 90 West St.,
New York City.

The steamship *Finance*, of the Panama Railroad Steamship Line, which was run down and sunk by the White Star Line steamship *Georgic* in the fog of Nov. 26, is rapidly breaking up where she lies in the lower bay. Seas breaking over the wreck have carried away the smokestack and most of the deck gear. The masts still are in place.

Negotiations are still pending for the purchase of a vessel to replace the *Finance*. If the steamers *Shawmut* and *Tremont*, now at Seattle, are secured by the government they will be used as transports for the Isthmian Canal, one of them replacing the *Finance*. It is reported that the owners of the vessels are asking \$750,000 for each of the vessels. If there is much delay in acquiring transports by purchase, a vessel will probably be chartered.

The steamship *Touraine*, of the Compagnie Generale Transatlantique, on arrival at New York reported passing an apparently deserted navy barge on fire at sea. The *Touraine* ran close to the barge, which was United States navy barge No. 228, but no sign of life was observed on the vessel, the crew probably having been picked up and the barge set afire that it might not be a menace to navigation.

Incoming trans-Atlantic liners are reporting heavy weather encountered on the passage. During the past few days a number of vessels have been arriving a day or more behind time.

The derelict destroyer *Seneca*, now stationed at Tompkinsville, S. I., performed her maiden operation last week by destroying the sunken barge *Independent*, 11 miles off Hog Island, Va. The *Independent* was directly in the path of coasting vessels, her foremast showing above water, and was a serious menace to navigation.

Capt. John Ludlow, for many years a builder and master of vessels sailing between New York and southern ports, has died at his home at Asbury Park,

The steamer *Admiral Dewey* arrived at New York last week, bringing the student party of treasure seekers from Kingston, Jamaica. It will be remembered that this party on a former occasion chartered the old cup defender *Mayflower* for a similar venture but were forced to abandon the vessel during a hurricane. On this latter attempt,

made in the schooner *Seagull*, several wrecks were located by the divers engaged on the venture but no treasure laden galleons were discovered. The treasure seekers returned empty handed. N. J.

The steamer *Valentia*, from Wilmington, N. C., for Bremen, cotton laden, arrived at Halifax, N. S., on Dec. 7, towing the oil tank steamer *Oriflamme*, which she picked up, disabled, at sea. On Nov. 29 the *Oriflamme*, from Philadelphia for Cete, France, with a cargo of oil, lost her propeller and tail shaft at sea. Shortly after becoming disabled she was sighted by the *Valentia*, which took her in tow, the tow line twice parting.

The United States steamer *Sterling* towed into Provincetown, Mass., on Saturday, the schooner *M. E. Eldridge*, of Dennis. The *Sterling* was out searching for coal barges which had parted from their tug, but was unsuccessful. She fell in with the *Eldridge* when 35 miles southeast from Great Round Shoal, the *Eldridge* flying signals of distress and being in a dangerous condition with an exhausted crew. The disabled vessel had encountered extremely rough weather.

The wreckage washed ashore on the coast of Newfoundland, at Cape Ray, confirms the loss of the steamer *Soo City*, from Chicago for Galveston. The wreckage consists of steamer's railings, cabin doors, life boats, fittings and clothing.

The bark *Shawmut*, from St. John, N. B., for New York, with a cargo of lumber, ran ashore last week at Machiasport, and has become a total loss. The agents of the vessel report that there was no insurance on the vessel, the cargo being insured at St. John. The crew was saved.

The first Japanese merchant vessel to arrive at Hampton Roads stopped at Newport News last week for bunker coal. She is a two-funneled steamer named the *Buyo Maru*, of tank build, and is bound from Port Arthur, Texas, for England, with a cargo of oil.

The British steamship *Snowdonian*, from Philadelphia, arrived recently at Messina and reported sighting the three-masted schooner *Henry Clausen, Jr.*, of Bath, Me., on Nov. 7, in a sinking condition. The schooner was waterlogged, with two of her masts carried away. A lifeboat, in charge of the chief officer of the *Snowdonian*, was

sent to the wreck and all hands, including the captain's wife, taken off. Before leaving the derelict she was set on fire.

Two British steamers, the *Calliope* and *Tantallon*, have been chartered to load cargoes of wheat at Philadelphia during the month of December. Exports of wheat to the United Kingdom and Continent show some activity, this wheat coming from Minnesota, Manitoba and other parts of the northwest.

Whether a dead whale is such an obstruction to navigation as to warrant the derelict destroyer *Seneca* being sent out to remove it remains to be seen. Capt. Moore, of the British steamship *Howthead*, which recently arrived at Norfolk, reported a dead whale of immense size off the Carolina coast. It protruded about 12 ft. above the surface.

Barge No. 101 from Boston for Halifax, N. S., in tow of the tug *John A. Hughes*, foundered on Thursday off Seal Island, drowning all hands, the tug being unable to rescue the crew owing to the heavy weather. The barge left Boston on Wednesday, carrying 220,000 gallons of coal tar, valued at \$6,000. She was owned by the Barrett Manufacturing Co., of Philadelphia, and was a lake-built bulk oil carrier.

The steam lightship *Manzanita* arrived at Valparaiso on Saturday on its way from Camden, N. J., for San Francisco. The other five vessels comprising the fleet of tenders and lightships that left Tompkinsville, Sept. 21, on the long run to the Pacific, arrived the same evening.

The tug *L. P. Smith*, en route from Cleveland to Buffalo with two dump scows in tow, put into the port of Ashtabula with only one, having lost the other near Fairport. Tugs were sent out in search of her.

The lights along the westerly Bar Point channel, which were discontinued by the lighthouse inspector at Buffalo without notifying the lake carriers, were relighted by an arrangement made by the Lake Carriers Association and will continue as long as needed.

Commander Ross, of the revenue service, last week conducted a party of steamship men and members of the Maritime Exchange, New York, over the new derelict destroyer *Seneca*, lying at her station at Tompkinsville, S. I.

BULK FREIGHTER FOR CANADIAN INTERESTS.

Especial interest attaches to the contract for a bulk freighter recently closed by Antonio C. Pessano, president of the Great Lakes Engineering Works, with the Inland Navigation Co., of Hamilton, Ont. It is the first instance of an American ship yard building a lake vessel for Canadian capital. The new steamer will be an American bottom and will fly the American flag, and is intended to carry ore and grain between a United States port and a Canadian port.

The Inland Navigation Co. is an amalgamation of the various steamship and dock interests that have hitherto been operated as separate companies by R. C. and A. B. Mackay, of Hamilton. Its president, Mr. W. Southam, is actively interested in a variety of Canadian enterprises, including the Hamilton Iron & Steel Co., as well as a number of newspapers. The ships belonging to the Inland Navigation Co. at present are:

Name.	When built.	Length and breadth.	Net tonnage.
Donnaconna	1900	254' 44"	1,465
Dundee	1906	250' 43"	1,431
Dundurn	1882	190' 30"	600
Dunelm	1907	250' 43"	1,481
Glenellah	1905	257' 44"	1,453
Neepawah	1903	253' 40"	1,190
Rosedale	1888	246' 35"	977
Stadacona	1908	building	
Strathcona	1900	255' 43"	1,465
Wahcondah	1903	240' 37"	996
Winona	1906	257' 44"	1,326

All these ships were built in Great Britain, with the exception of the Dundern, which was purchased in the United States, her former name being Pere Marquette II.

The new bulk freighter which the Great Lakes Engineering Works will build for this company will be 500 ft. over all, 480 ft. keel, 56 ft. beam and 30 ft. deep. She will carry ore from the upper lake ports to Point Edward, just above Sarnia. The Hamilton Iron & Steel Co. has found it cheaper to discharge ore at Point Edward and transfer it by rail to Hamilton rather than to carry it down the rivers and through the Welland canal into Lake Ontario.

Speaking to Mr. Pessano, Mr. A. B. Mackay, of the Inland Navigation Co., stated that there was little encouragement offered to Canadian vessel owners by the Dominion government and that their experience in delivery had been unfortunate. He doubtless referred to the bulk freighter ordered from the Canadian Ship Building Co., which was to have been constructed at Bridgeburg, but which was never assembled, though some of the steel was forwarded to the yard. Mr. Mackay was also quite pointed in

his remarks concerning the duty which Canadian owners are compelled to pay on repairs made to their vessels in United States ship yards.

The Hamilton Iron & Steel Co. consumes about 200,000 tons of ore per annum, and the new steamer will, therefore, have all the business that it can attend to.

NOVEMBER LAKE LEVELS.

The United States Lake Survey reports the stages of the great lakes for the month of November, as follows:

Lakes.	Feet above tide-water, New York.
Superior	602.23
Michigan-Huron	580.34
Erie	571.69
Ontario	245.92

Since last month Lake Superior has fallen $5\frac{1}{2}$ in., Lakes Michigan and Huron have fallen $6\frac{1}{4}$ in., Lake Erie has fallen $7\frac{1}{2}$ in., and Lake Ontario $6\frac{1}{4}$ in. The large fall in the levels of all lakes has been due to the continuance of the drouth. During the past four months little rain has fallen.

During December Lake Superior should fall $3\frac{1}{2}$ in., Lakes Michigan and Huron 4 in., Lake Erie 2 in., and Lake Ontario $1\frac{1}{2}$ in.

Lake Superior is $9\frac{1}{4}$ in. lower than the average November stage of the past 10 years and about $7\frac{3}{4}$ in. less than last year. It is $6\frac{3}{4}$ in. higher than in November, 1892, but $5\frac{1}{4}$ in. lower than in November, 1906, and $11\frac{1}{2}$ in. lower than in November, 1903.

Lakes Michigan and Huron show a stage about $1\frac{3}{4}$ in. lower than the average November stage of the past 10 years and 14 in. higher than in 1895, but $5\frac{1}{4}$ in. lower than last year. In 1885 the water was $29\frac{1}{2}$ in. higher.

Lake Erie is $8\frac{1}{2}$ in. lower than in November last year. It is $1\frac{3}{4}$ in. below the mean November stage of the past 10 years and 12 in. higher than in 1895. It is, however, $21\frac{1}{2}$ in. lower than in 1876 and $22\frac{3}{4}$ in. lower than in 1885.

Lake Ontario is 5 in. lower than in November last year. In 1861 it was $22\frac{3}{4}$ in. higher. It is $7\frac{1}{2}$ in. higher than the average November stage of the past 10 years, 30 in. higher than in 1895, but $13\frac{3}{4}$ in. lower than in 1885.

A report from Kobe, Japan, says that the Japanese steamer Ginsel Maru foundered off Wei-hei-wei, Nov. 30. Seventy persons, including the entire crew, were drowned. The Ginsel Maru was a wooden screw steamer of 487 gross and 301 net tons. She was built at Osaka in 1907.

PACIFIC COAST NOTES.

Office of the MARINE REVIEW,
302 Pioneer Bldg., Seattle, Wash., Nov. 21.

The steamer Monticello has been withdrawn from the run between Seattle and Bremerton. This action concludes a bitter war which has been waged for the past five months between the Port Orchard route and the owners of the Monticello for the traffic between Seattle and Port Orchard Bay. It is probable, however, that the Monticello will again be operated on this run next summer.

The state supreme court at Olympia, Wash., has handed down a decision granting A. J. West judgment for \$13,750 and costs against the owners of the steamer Norwood. The steamer ran into Mr. West's bridge at Aberdeen, doing much damage. It is claimed that the collision with the bridge was due to careless navigating on the part of the officers of the steamer.

The new lighthouse at Liston's front range has also been completed at a cost of \$11,000.

The steamship Admiral Sampson, recently sold to the Pacific-Alaska Steamship Co., has sailed from Philadelphia for San Francisco. At Coronel she will stop for bunker coal, proceeding from there direct to her destination. Before leaving Philadelphia she was equipped with a wireless telegraphy outfit, and on her arrival at San Francisco will have oil-burning machinery installed.

The British steamship Spondilus, which was cleared for New York to finish loading oil for Calcutta, will load her entire cargo at Point Breeze. Contrary to expectation sufficient oil was found to fill the vessel at that place, the Spondilus' capacity being 9,500 tons.

The Cunard Steamship Co. has arranged a contract with the Denaby & Cadeby Colliery Co., Ltd., Mexborough, for the supply of 220,000 tons of coal, consisting of 75 per cent of screened coal and 25 per cent of nut and slack, to be delivered over a period of 12 months. The price is said to be \$2.58.

The tug Patrick McGurl, of the Shamrock Towing Co., was rammed off Pier 8, N. R., on Nov. 30, and sank in 10 minutes. The tug was run

down by the N. Y., N. H. & H. Railroad Transfer No. 1, while on her way to tie up for the night. Through the presence of mind of the captain and the driving capacity of the engineer the unfortunate vessel was immediately headed for the nearest wharf, where she sank immediately after the crew had scrambled ashore.

The steamer Joseph Vaccaro, of the Vaccaro line, arrived at New Orleans on Nov. 23 and reported that the steamer Cartago, which went ashore on the Umatilla Island reefs off the Honduran coast on Nov. 18, will probably be saved without much loss to ship or cargo. The Cartago was bound from New Orleans to Colon with 40 passengers and a big cargo of general merchandise.

The steamer Chattahoochee of the Ocean Steamship Co., arrived at Norfolk, Va., on Nov. 19, with her forward hold afire. The fire was discovered off the North Carolina coast, and being difficult to suppress caused the course of the vessel being directed for Norfolk. The captain refused all assistance from the wrecking tugs which met the steamer, and beached the vessel on Lambert's Point flats, below the city. The fire was extinguished by flooding the forward compartment with water. A cargo of 4,000 bales of cotton was in the Chattahoochee, which plies between Savannah and Boston.

Wreckers are blowing up the steamship Gulf Stream off Hereford, N. J. The steamer was built in 1861 and ran ashore in a fog on Jan. 2, 1903, since when she has been a serious menace to the Anglesea fishing fleet in the narrow inlet near where the wreck lies. During the civil war the Gulf Stream was a blockade runner.

Charles W. Hanscom, president of the Eastern Ship Building Co., has announced that the plant at Croton Shore, New London, where the steamships Minnesota and Dakota were built, will be sold at auction and the yard dismantled.

Henry P. Havens, of New York, has brought suit in the United States court at New York against the Hudson Transportation Co., to recover \$15,000 damages for negligent and unskillful towage. The tug Asher Hudson left Norfolk on Nov. 11 with the barge Nicholas and the schooner Florence Shay, and in heavy weather cut the Florence Shay adrift. The

vessel, owned by Henry P. Havens, was wrecked and two of the crew lost their lives.

Phillip D. Sloan, ship builder, Seattle, launched two large scows Dec. 1 and 2. The scows are 82 ft. long, 26 ft. beam and 7 ft. deep each, with a capacity of 250 tons apiece. They were built for the Drummond Light-erage Co., of Seattle. A third scow is building and will be launched shortly. The new steamer Vashonian will be launched by Mr. Sloan Dec. 12. The same builder will rebuild the old stern-wheeler Vashon, putting 18 ft. in her hull and fitting her out with new machinery and boilers which is expected to increase her speed.

C. W. Wiley, Pacific coast manager for the Boston Steamship Co., states that the report, recently received from Washington, D. C., to the effect that the negotiations between the United States government and the Boston Steamship Co. for the sale of the company's two 10,000-ton liners Shawmut and Tremont are about to be consummated, is incorrect. The negotiations are no further advanced than they have been for three months and it is not known how soon the government is to take over these big steamers.

It is expected that the old steamer Victorian, owned by the Great Northern railway and used by it as a car ferry between Victoria and New Westminster is to be sold shortly to Edward Clark, of Seattle, and converted into an excursion steamer. It is probable that the price paid for her will be \$40,000. She is to be thoroughly overhauled and a small dance hall is to be built on the lower deck. The Victorian cost originally \$250,000, and was capable of a speed of 18 knots.

Completing the roughest trip of the season, the C. P. R. liner Empress of Japan arrived in Vancouver, B. C., Nov. 27, 12 days from Yokohama. She carried a cargo worth \$2,000,000, the bulk of which was 659 tons of silk worth \$1,500,000.

Recent reports made by sailing vessels lately arrived at various Pacific coast ports give information that an unusual amount of ice has been seen in the vicinity of the Falkland Islands and Cape Horn. It is considered likely that the great amount of ice in the high southern latitudes this year may account for the mysterious

disappearance of so many ships in this region. This year the ships Falklandbank, Carnedd Llewellyn and Toxteth, all on voyages around Cape Horn, have disappeared. It is possible that they may have met their doom in the ice packs.

With a full cargo of coal the steamship Admiral Sampson, recently bought on the Atlantic coast by the Alaska Pacific Steamship Co. for the Seattle-San Francisco route, has left New York. She is expected to arrive in San Francisco about Jan. 25 at which time the contracts for converting her into an oil burner and making other necessary changes will have been awarded. The repairs will probably take several weeks as it is not expected that the Sampson will be placed on her regular run until some time in May.

A \$15,000 bell, tower and beacon buoy at Swiitsure bank is reported missing. It is feared that some vessel has collided with it and it has foundered. Last December the former buoy at this bank disappeared and has never been recovered.

The steam schooner Northland, which struck on Enterprise reef at the entrance to Active Pass, B. C., recently, has been docked at the Moran Co.'s yard and found to be but little damaged. Ten plates were merely bent but will have to be removed and faired. The Northland will be in the dock about 10 days.

Joseph Supple, ship builder, Portland, has laid the keel of the new steamer HydK which he is to build for the Kitsap County Transportation Co. of Seattle.

It is evident from the annual report of General Marshall, chief of army engineers, in which he discussed river and harbor improvements in the northwest, that in his opinion the Celilo canal and the Columbia river jetty must be completed before any other important improvements to the Columbia river are undertaken on a large scale. The Celilo canal is a canal and lock around Celilo falls which make it possible to reach the upper Columbia river by boat from Portland. A portage railway is operated at this point at present. The jetty at the mouth of the river is now extended a distance of 29,416 ft. and it is designed to assist in keeping a 25-ft. channel over the bar.



DEVOTED TO EVERYTHING AND EVERY
INTEREST CONNECTED OR ASSO-
CIATED WITH MARINE MATTERS
ON THE FACE OF THE EARTH.

Published every Thursday by

**The Penton Publishing Co.
CLEVELAND.**

BOSTON.....73-74 Journal Bldg.
BUFFALO.....932 Ellicott Sq.
CHICAGO.....1328 Monadnock Bldg.
CINCINNATI.....First National Bank Bldg.
NEW YORK.....1005 West Street Bldg.
PITTSBURG.....510 Park Bldg.
SEATTLE.....302 Pioneer Bldg.

*Correspondence on Marine Engineering, Ship
Building and Shipping Subjects Solicited.*

Subscription, U. S. and Mexico, \$3.00 per
annum. Canada, \$4.00. Foreign, \$4.50.
Subscribers can have addresses changed at will.

Change of advertising copy must reach this
office on Thursday preceding date
of publication.

The Cleveland News Co. will supply the trade
with the MARINE REVIEW through the
regular channels of the American
News Co.

European Agents, The International News
Company, Breams Building, Chancery
Lane, London, E. C., England.

Entered at the Post Office at Cleveland, Ohio,
as Second Class Matter.

December 10, 1908.

**LAKE CARRIERS' CO-OPERA-
TIVE PLAN.**

The report of the executive committee of the Lake Carriers' Association, set forth elsewhere in these columns, gives the situation and the plans and the reasons for it so clearly and succinctly as to leave little to be said by way of enlargement.

All who keep in touch with such matters are familiar with the plan that was formulated in 1901 and sent out in printed form to the members of the Lake Carriers' Association at that time and printed in our columns. The tentative plan was prepared and sent out by the then secretary of the association, Chas. H. Keep, based on consideration of the somewhat similar experiment in England known as the Shipping Federation and the plans of co-operative insurance of some of the railroads and other large industrial systems. Since that time various public and private plans of co-operative insurance of employees, com-

pensation in case of accident, provision for safety of employees, pensions, etc., have been widely discussed and to some extent adopted, and these are waiting the test of fair trial.

These matters have from time to time as they arose been discussed in our columns.

A peculiarity in the lake trade is the intervention of the closed season and the necessary uncertainty and change in service from ship to ship, making the problem different from that in the case of railroads and large industrial establishments where men are employed the year around. The lake carriers concluded last spring that a careful and fair test of the plan of union contracts, which they permitted to suspend their own plan beginning in 1902, had failed to accomplish the result sought of bettering conditions and making the service justly satisfactory to all concerned.

As the report shows, the executive committee went to work on the matter by taking up the plan of 1901 and testing it by all the available developments and experience since, and evolved the plan adopted.

In a general way, the idea seems to be to recognize the interdependence of the owner, officers and crew and to work to develop this in the best interests of all concerned. Analyzed, the plan is that the master is given opportunity to be an associate member of the Lake Carriers' Association; he and the engineer are treated as the executive officers of the ship, each being given the authority which goes with his responsibility to the government, which, in the first place, gives his license, and to the owner and to the property and lives on board, each according to his department of service and all working in harmony through the master as the most immediate and direct representative of the owner. No hard and fast rules are laid down in respect to anything except that the officers and the men alike, in order to obtain the recommendation of the association and the use of its assem-

bly rooms, must be free to be or not to be member of any union or other organization or society exactly as he may see fit, providing that he accords to every other officer and man exactly the same liberty of action. Beyond this nothing is required except a reasonable degree of competency in the ordinary performance of the usual and lawful duties of his position. A necessary and laudable feature, and the only one for which any charge is made in the way of dues or otherwise, is the providing of comfortable and convenient assembly rooms for the use of the officers and men while ashore. The advantage can readily be seen of having such places in the principal ports where men can go, with the freedom of one who has paid what is required for the privilege, and see the current newspapers and magazines and obtain writing materials, have a convenient place to write letters, with assistance if needed, and have a definite place for receiving letters, where they can be gotten or forwarded according to his instructions. Too much cannot be said in favor of aid in case of death or permanent disability or shipwreck, because only those who are in close touch with this lake transportation can appreciate the uncertainty, delays and even hardships which occur in such cases. It is not the purpose evidently to be in any sense a life insurance company, but in what seems to be a generous way to furnish immediate provision, free of all red tape and technicalities and without charge, for those expenses which should be available at once, and to make the same provision in case of permanent disability; and all this without reference to any question of the legal liability of anybody in respect of any claim arising out of accident. Nothing could be clearer than the declaration of the committee that these provisions are not to affect any legal claim for or against any party to be concerned; and without any inquiry or question about how the accident occurred or who may or may not have been to blame in any respect.

This seems a long step forward as

compared to the more elaborate schemes of co-operative or compulsory insurance, compensation or pension, and recommends itself by its perfect simplicity.

Another good step taken by the association was its adoption of a resolution not to reduce the outstanding schedule of wages, leaving it open to make any necessary adjustment, but there should be no reduction. This is opportune and fortunate at this time as showing the confidence of vessel owners that the recent and existing depression is not going to be permanent, and that, as one vessel owner expressed it, the sense of the owners is that the burden of depression should not fall upon the men so far as employment can be furnished.

Having had occasion to consider and comment in our columns on the various plans by government and private interests during the past few years, we feel that it is not too much to say that, as applied to the conditions, the plan presented by the Lake Carriers' Association is the best that we have been called upon to discuss, looking to fair play without attempting any dictation whatever as to who a man is or what his affiliations are, and leaving every man perfectly free to choose in this and in his mode of life, provided only that he renders proper competent service according to his engagement and leaves every other man free to the enjoyment of the same right.

BULK FREIGHTER CLEMSON LOST.

The steamer D. M. Clemson, which left Lorain on Nov. 28 with a cargo of coal bound for the head of the lakes, is missing. She passed the Sault at 9:30 o'clock Nov. 30 and parted company about 10 hours later near Whitefish Point with the steamer J. J. H. Brown. The Clemson took a southerly course and the Brown a northerly one. That was the last seen of the Clemson. A falling barometer at the time indicated a storm which broke a few hours later with great violence. The Clemson should have been at that time about 75 miles beyond Whitefish Point. The Brown reached Duluth safely, took on a

cargo of grain, and returned to the Sault. Still there was no word from the Clemson. Meanwhile passing vessels had sighted wreckage floating in considerable quantities near Crisp Point. This was supposed to be wreckage of the steamer Tampa which passed the Sault a few days before but had not reached port. However, the Tampa reached Fort William on Dec. 5 safely, having been in shelter off Keweenaw Point, and vessel owners began to fear that the wreckage was that of the steamer Clemson. Vessel owners were reluctant to believe, however, that the Clemson had foundered, as she was staunchly built and sailed by competent hands. Tugs, however, have made a thorough search of the sheltered points on Lake Superior but have found no trace of the steamer. Hope that she is safe is now practically abandoned.

Whatever may have been the cause of the Clemson's foundering will remain a matter of conjecture for apparently no member of the crew has survived. The general opinion is that she must have suffered from derangement of her machinery and so became unmanageable; another conjecture is that the obstruction which she struck in Conneaut harbor two or three months ago may have done greater damage than was suspected.

The Clemson was built at the West Superior yard of the American Ship Building Co. in 1903 for the Provident Steamship Co., of which Capt. A. B. Wolvin is the moving spirit. Her sisters are the James H. Hoyt, D. G. Kerr and James H. Reed. They were the first vessels on the lakes to be constructed with hatches spaced 12 ft. centers.

The Clemson was 468 ft. over all, 448 ft. keel, 52 ft. beam and 28 ft. deep. She had quadruple-expansion engines and Babcock & Wilcox water tube boilers. When she left Lorain she was heavily loaded with coal, drawing 17 ft. 11 in. forward and 18 ft. 7 in. aft.

The crew of the Clemson consisted of the following: S. R. Chamberlain, Duluth, captain; W. A. McLeod, Duluth, first mate; Charles Woods, Duluth, second mate; J. J. McCoy, Duluth, chief engineer; Lee Cunningham, Toledo, first assistant engineer; Guy Webb, Duluth, second assistant engineer; D. S. Regan, Marine City, wheelsman; Bert Balfour, Marine City, steward; Steve Bollman, Marine City, assistant steward; Rufus Simpson, Port Lampton, watchman; Harry Price, St. Louis, deck hand; Fred

Lenyon, Detroit, fireman; George Welsh, Buffalo, fireman; John Driscoll, Buffalo, deck hand; Fred Carney, Buffalo, deck hand; M. Andrews, Milwaukee, deck hand; Bernard Murphy, Duluth, fireman; Wm. Hunt, Duluth, oiler; James Grattan, Lorain, deck hand; Arthur Burkhart, Lorain, deck hand; Martin Hansen, wheelsman; A. L. Preston, fireman; Wm. Battishill, deck hand.

There is reason to believe also that the steamer Soo City, for many years an excursion boat on the lakes, has foundered off Newfoundland. The Soo City was recently sold by the Indiana Transportation Co. to Felix Jackson, Velasco, Tex., and was en route to New Orleans. She was in command of Capt. John G. Dillon, of Brooklyn, formerly commander of the United States transport Missouri. She carried a crew of about 13 men, but had no passengers aboard.

The Soo City sailed from Michigan City on Nov. 1 and left Quebec on Nov. 14. A week later, nothing having been heard of her, she was posted as missing. Capt. F. V. Dority, of Milwaukee, took the Soo City to Ogdensburg where the command was turned over to Capt. Dillon. Her first mate was John Casey, of Chicago, and other members of the crew were: Second mate, Angus McIntyre, Chicago; first engineer, Charles Warwick, Michigan City, Ind.; second engineer, N. J. Duncan, Chicago; purser, James Anderson, Montague, Mich.; oilers, Frank Kelly, Alpena, Mich., and George Brown, Chicago; fireman, Frank Schwimm, Michigan City, Ind., and Samuel Olebsky, Chicago; coal passer, E. L. Weaver, Dowagiac, Mich.; chef, Max Sanders, Chicago; second cook, Charles Warner, Chicago.

The Soo City was built in 1888 at West Bay City, Mich.

Barge 101, the first whaleback ever built on the great lakes, which was transferred to the coast a few years ago, also foundered in the gale off Nova Scotia. She was owned by the Barre Mfg. Co., of Boston, and had a cargo of coal tar aboard when she foundered.

Capt. T. V. O'Connor, of Buffalo, president of the Licensed Tugmen's Protective Association, has entered upon his duties as acting president of the Longshoremen's Association. Daniel J. Kefce will sever his connection with the organization owing to his appointment as commissioner general of immigration.

Lake Carriers' Comprehensive Plan.

Herewith is published an interpretation and outline of the plan which has been evolved by the executive committee of the Lake Carriers' Association to cement and consolidate various interests associated with the operation of the ship. The plan is broad and comprehensive and employers of labor everywhere would do well to study it. The plan is distinguished by a feeling of fair dealing and helpfulness. It is a consistent effort to mold into one harmonious family various elements that enter into lake trade. It is formulated upon generous lines, so generous in fact that it may result in some withdrawals from the membership of the Lake Carriers' Association, though the association is prepared to face even that contingency. It would rather be a small compact force working unanimously to a common end than a larger body with dissenting members.

It is quite aside from the plan, but it is illuminating nevertheless as revealing the general temper of the association, that there shall be no reduction in the wage scale next year. This is not alone an expression of the association's wishes, but reflects the disposition of the individual members. The year just closed has been a lean one, but it was preceded by several fat ones, so that the prudent manager is abundantly able to withstand the lean one without causing his men to suffer. The action of the association upon this point is well put forward in the adoption of the following resolution:

"While we have in mind the extreme depression in lake trade of the season now closing which has required vessels in many cases to run at a loss or not at all, we view this as a temporary condition which we shared with other business interests. We have such confident faith in the substantial recovery of business during 1909 that we do now resolve that the average rate of minimum wages of employes for 1909 shall be the same, with any necessary adjustment as may be required, but without a general reduction."

The plan which the Lake Carriers' Association has now resolved to put in force has long been in mind. It was held in abeyance for several seasons, in order to give the various unions and associations that had formed along the lakes full oppor-

tunity to demonstrate what they could do in a like undertaking. In the opinion of the lake carriers their efforts have resulted in failure.

The plan proposed by the lake carriers involves the establishment of assembly rooms in the principal ports on the lakes. These assembly rooms will be virtually clubs and may be used by the men aboard ships in precisely the same manner as a business man uses his club. They will have all the appurtenances of club life and can be used as convenient vehicles for the receiving and forwarding of mail, the safeguarding of personal effects and all the ordinary facilities of a club. The committee appointed to establish these assembly rooms consists of President Livingstone, Vice President Sheadle, T. T. Morford and D. Sullivan, all men of wide experience who can be depended upon to make them complete institutions in every detail. Dues for all seamen below the rank of licensed officer will be \$1 per annum.

Certificates or cards will be issued to employes registering of union affiliations. All that will be asked of them is that they shall pledge themselves to discharge their lawful duties towards the ship. These certificates will be limited to one year, and will be accompanied by a discharge book to be deposited with the master or chief engineer upon which the holder is employed. This book will be returned to him at the close of the season with a statement of the character of service rendered.

A benefit system has also been devised for the holders of these certificates should anything befall them in the line of duty. The president of the association is authorized to wire financial aid immediately and in case of death or total disablement to pay a substantial sum of money to the beneficiary or his heirs, and this without prejudice to any further liability of the ship or owner. This help is intended to be immediate and no proof of any kind will be required beyond the fact that the accident occurred. The context of the plan as given out by the executive committee is as follows:

CONTEXT OF THE PLAN.

In 1901 the association was about to put into effect so far as it could a plan in respect to assuring reliable officers and seamen on the broad

lines of what is commonly known as the "open shop principle," with full freedom of contract for the best interest and safety in operation of the lake trade, including promise of assembly club rooms, with the further idea to be developed of a modern sailors' institute and home adapted to lake conditions. This movement was interrupted by the proposal brought forward by various unions and associations which included many of the employes of lake ships, that if they were intrusted with this responsible duty they would furnish the necessary number of competent men, would better the service, and, along with this, care for that feature of the lake carriers' plan to make provision for exigencies which, in the employment, come to men and to their families, and all with some suitable consideration for the men when ashore.

The association was so induced to set aside its own plan for the time in favor of these proposals, which were given more than a fair trial during the ensuing six seasons. That it proves a complete failure was the expressed opinion of owners and representatives of over 90 per cent of the tonnage represented in the Lake Carriers' Association, who, in a meeting on April 9, 1908, declared unanimously that

"the experience of the ship owners, managers and licensed officers for the past years has demonstrated the necessity of what is referred to as the open shop principle in order to give that control and direction of the ships which is required for the equal good of the owner, the employe of the ships and the dependent trade,"

and so reverted to the principle formerly considered as the one suited to conditions, and the matter was referred to the executive committee with power to act; the members saying, further, that

"it should be the aim of the committee in the means they should adopt to recognize a fair and equitable rate of wages, to insist upon such regulations as should promote the comfort and well-being of the employes, shall put the discipline of the ship in the hands of her executive officers, and tendering liberal appropriate wages and conditions, require in response diligent and prompt service from the members of the crew."

Your committee taking up the data, reports of committees and plan of op-

eration as far as worked out in 1901, have examined these in the light of intervening experience and the evils which compelled the declaration and resolutions of April 9, recognizing that the association has no management of ships and is not the employer of crews, but has, as one of its objects,

"to establish and maintain shipping offices for the convenient securing of seamen for the vessels on the great lakes, their connecting and tributary waters, * * * to establish and maintain, by contract or otherwise, such amicable relations between employers and employed as will avoid the public injury that would result from lockouts or strikes in the lake carrying service; to provide for the prompt and amicable adjustment of matters affecting shipping and the interests of vessel owners of the great lakes."

Pursuant to the duty and authority put upon it by the members, and more recently by the board of directors, your committee has concluded to adopt and put in practical form the plan in contemplation in 1901 for the betterment of conditions, uplifting and dignifying the service, better protection of life and property afloat, with a reasonable and proper consideration for the employes and their designated beneficiaries, to the end that a careful and sufficient test be made of our own plan, and as the same shall develop through experience. This we make available to every officer and man without regard to membership or affiliation with any union or association, industrial, religious or philanthropic, based alone on competency for reasonable performance of duty, and without expense except for the use and privileges of the assembly rooms and their conveniences, which we have put at the nominal sum of 8 1/3 cents per month to seamen and a somewhat higher charge to officers, this being also with a feeling that the fact of paying something dignifies the position of the seamen in their use. With this will go certificates of ascertained fitness, record of service as evidence and credential to him, and then having regard to the numerous cases where accidental death in the employment and the loss of effect and the expense of return have involved unnecessary delays, complication and hardship, we provide independent of all questions of fault or liability of the owners or of any one in reasonable manner to meet such exigent expenses at the charge of the association without cost to the employe.

Appreciating that in the progress of working out our plan some changes

will probably be necessary, as, for example, the development of the assembly or club rooms will be carried out as fully as warranted, and possibly an additional charge may be justified, and it is hoped that a plan for sailors' home and institute may be put into operation under the auspices or with the co-operation of the Lake Carriers' Association, we now report that we have adopted the following plan, co-operation in which is asked on the part of the members of the association and the officers of the ships in their employment and dealing with officers and seamen:

I.

ASSEMBLY ROOMS.

These shall be established in such principal ports on the lakes as the special committee, acting responsible to the executive committee, shall from time to time decide. These rooms shall be clean, bright and attractive, with good sanitary provisions, and furnished with current newspapers, magazines and, as they may be secured, with libraries. They will be provided with writing materials, assistance in the writing of letters, reliable places of address for letters, and have similar conveniences. For the privilege of their use, under reasonable rules for proper use, the charge shall be at the rate of \$1 per year to seamen and a somewhat larger charge to officers, available to all officers and seamen who have the certificate of recommendation as such from the association; and the revocation of such certificate shall debar further use of the assembly rooms under the certificate.

II.

CERTIFICATES OR CARDS.

Any officer or seaman applying for a certificate or recommendation of the Lake Carriers' Association must declare himself willing and pledge himself to discharge his lawful duties on towards the ship on which employed, regardless of membership or affiliation on his own part or that of any other member of the officers and crew with any union or association of any kind; and these certificates once given must be revocable in the discretion of the association upon such information as it shall have received and requiring that its consideration and decision of the matter shall be exclusive and final.

III.

ISSUING CERTIFICATES.

In putting the system in operation, certificates of competency will be granted as a matter of course to holders of government licenses according

to the grade of the license. There will then be two other grades of certificate, to able-bodied seamen and to ordinary seamen.

The regular certificate below licensed officer will be issued in the first instance and until record in discharge book can be presented, to any seaman upon his own representation as to previous service, supported by such information as the issuing officer can obtain, preferably the recommendation of at least one licensed officer, and conditioned on the pledge of the applicant that his representations are true and that he will faithfully perform all lawful duties without reference to membership or affiliation of himself or other members of officers and crew in any union or association whatsoever, with the discretion and authority in the association to revoke its certificate of recommendation on such information as shall come to it.

IV.

RECORD DISCHARGE BOOKS.

To insure reliability, the certificate will be limited to one year so as to cover a season of navigation. At the time of issuing the certificate, except as to masters and chief engineers, the association record discharge book, bearing the same number as the certificate, will be put in the hands of the holder, to be deposited by him at the time of signing articles with the master or the chief engineer, according to the department of service. In this book such executive officer will at the termination of the service on the ship enter a discharge, and in the appropriate column a statement of the character of service. If this entry be "good" or "fair," the book shall be returned direct to the man, but when in the best judgment of the officer with whom the book is deposited, such entry cannot justly be made, and in every case of desertion or failure to serve after engaging, the book shall be returned by the master to the secretary of the association, together with a statement of explanation from the officer with whom the book was deposited. The association will thereupon take such action and in such manner as it may deem wise and just as to canceling its outstanding certificate.

V.

DEATH EXPENSE RELIEF.

The association realizes the difficulties which have come in cases of accidental death, to families, relatives and friends from the absence of some immediate provision for expenses, as

well as in the case of shipwreck, which we treat in the next paragraph.

In case of death from accident, incident to employment, that is to say, on board or in line of duty to any ship included in its membership, the association shall pay sums as stated in the schedule given below but according to the grade of actual employment at the time the accident occurred, without reference to cause or any bearing or effect whatsoever on legal claim or liability concerning the same. No proof of condition of any kind shall be required beyond the facts that the accident occurred, no matter from what cause or in what manner, on board or in performance of the duty of a ship included in our membership, and that the man held the certificate and book of the association.

VI. SHIPWRECK.

In case of shipwreck it has been usual, though not legally required, for the owner to give or advance some sum on account of lost effects and return to port of shipment. The association takes the responsibility to the extent stated below of such payments or advances being promptly made to holders of its certificates and book in cases of lake carriers' ships, and will be promptly answerable for the owner in such cases, returning each man to the port of shipment or meeting the expense of each man to the amount of the usual expense to his place of shipment, the man having the option to go to any other place and have or apply the amount; and also, when his effects are lost, it will be answerable for prompt advancement up to \$50 and \$30 in the case, respectively, of licensed officer and other member of crew, without foreclosing or affecting any legal rights concerning any claim for a greater sum.

VII. GENERAL RECORDS.

In order that these objects may be intelligently carried out, the applicant of necessity is required to give the necessary information as to previous service and to designate the beneficiaries, not necessarily dependents, as definitely as possible, not to be changed after once made, except through the officers of the association, of all which and of cards issued and other matter of detail, the secretary will keep appropriate record with any other necessary matters as to forfeiture of tickets, etc., all of which is matter of detail. An important point

in this respect is the protection of the holder of a card in his own use of the assembly rooms, and insures the promptest possible payment of the aids in case of death and shipwreck, and generally to guard against any attempted imposition.

Resolved, That subject to the rules printed below, the Lake Carriers' Association will pay without charge to the employee, for total disablement or death occurring to an employee by drowning or other accident on board or directly in the service of any vessel included in the membership of the association, benefits according to the following scale, but in every instance the benefit to be according to the grade and capacity of the employment at the actual time of the accident:

SCALE.

Master	\$500.00
Chief engineer	400.00
First mate	250.00
Second engineer	250.00
Second mate	150.00
Third engineer	150.00
Steward	150.00
Able-bodied seaman	100.00
Ordinary seaman	75.00

RULES.

1. The benefit shall be paid only to and in respect of an officer or seaman who has a current unrevoked certificate or card of recommendation, and, in case of master and chief engineer, a record discharge book of the association, and has made designation of beneficiary, and shall be on account of accident resulting in death occurring within one year or in total disablement, as defined below, while a member of her crew on board or in performing the duties of a ship included in the membership of the association. Total disablement is defined as where a man loses one foot or one hand by complete severance at or above the ankle or wrist or by the destruction of the sight of both eyes.

2. Whenever information comes to the president of the death by accident on a lake carriers' vessel of one having a certificate or card and book of the association, he may direct the treasurer to pay out at once not exceeding one-half the amount of the benefit nor more than \$50 in any case, for burial or other expense, and the balance, or the whole, if no such advance be made, shall be paid by the treasurer as promptly as facts can be obtained by the officials of the association of the accident and the death or disablement, such settling payment to be made only to the beneficiary or beneficiaries designated in writing by the deceased employee at

the time of receiving a certificate or card, or as changed according to the provisions in his application. In case of total disablement, the sum shall be paid to such disabled person as and at such times as he may request.

3. The benefit is intended and shall be free of charge or expense to the employee or the party to whom paid, and nothing further is required than that the accident occurred in course of employment in a ship in the membership of the association to a person having its unrevoked certificate or card and book. This does not relieve or in any manner affect any legal liability of the ship or owner.

4. In case of shipwreck, the Lake Carriers' Association will be responsible that each member of the crew who has its certificate or card and its record book unrevoked shall be returned to or have from the owner the cost of return to his place of shipment, and where his effects have been lost that he shall promptly receive up to \$50 in the case of a licensed officer and \$30 in the case of other members of the crew, without impairment of any legal right to a greater sum.

CLOSE OF LAKE SEASON.

There are still a few belated cargoes to be delivered and then the season of navigation for 1908 will be over. Quite a few boats are operating under excess insurance, but ice is fast forming in the rivers and it is doubtful if their trips will be very profitable, notwithstanding advanced rates. Several boats will leave the Canadian head of the lakes with grain for Buffalo this week, but their movements will be attended with difficulty and it may be some time next week before they can safely run the rivers. The steamer J. E. Upson is scheduled to leave Cleveland Friday with a cargo of coal for Milwaukee and she will in all likelihood be the last boat to leave Lake Erie this season. Zero weather prevails at the head of the lakes and ice is fast forming at the harbors. It may be necessary to employ ice-breaking tugs to get vessels now en route to the head of the lakes into harbor.

Shipments of grain have been rushed from the Duluth-Superior harbor. During the week ended Dec. 5, 11,974,000 bu. of grain were shipped, probably the largest amount ever made from any port in the world, in that length of time.

As far as ore shipments are concerned,

cerned the season of 1908 has after all been quite respectable. Up to Dec. 1, 25,348,168 tons were shipped. While this is a decrease of 15,849,771 tons over 1907 shipments, it is nevertheless more ore than was shipped in any one year on the great lakes up to 1905, with the exception of the year 1902. Following are the shipments by ports:

	November, 1906.	November, 1907.	November, 1908.
Port and dock.	1906.	1907.	1908.
Escanaba	748,912	469,373	586,112
Marquette	233,933	307,547	290,451
Ashland	284,500	319,438	479,015
Superior	626,633	679,237	629,771
Duluth	1,142,959	1,537,438	876,600
Two Harbors ..	697,223	843,043	756,146
Total	3,734,167	4,156,076	3,618,095

	To Dec. 1, 1906.	To Dec. 1, 1907.	To Dec. 1, 1908.
Port and dock.	1906.	1907.	1908.
Escanaba	5,716,272	5,722,416	3,332,229
Marquette	2,743,219	3,009,360	1,468,181
Ashland	3,333,561	3,423,277	2,498,963
Superior	5,979,378	7,427,182	3,538,390
Duluth	11,098,175	13,445,977	8,808,168
Two Harbors ..	8,102,397	8,169,727	5,702,237
Total	36,973,002	41,197,939	25,348,168

PIG IRON SITUATION.

Possibly as significant a statement as has been made in the past week is the positive announcement that the Pennsylvania railroad would place an order for 160,000 tons of steel rails within a few days, this indicating that the general buying movement on the part of the railroads will soon be started. The market is rather quiet in both pig iron and finished products. Rumors of advances in prices of steel products are declared to be without foundation. Cast iron pipe interests have been the heaviest buyers of the week in pig iron. Pig iron prices are firm with no indication of weakness. Blast furnace production during November was at the rate of 52,744 tons daily, compared with 50,764 tons in October. Some large contracts for structural material have been awarded in Chicago and New York, and many small structural contracts have also been placed. With the exception of November, 1906, the past month was the heaviest in orders ever received by the American Steel & Wire Co. There is considerable buying of furnace coke for the first half of next year.

DEATH OF FRANK L. VANCE.

Vesselmen in general, particularly those who were associated with the lake trade in its early days, were profoundly shocked to hear of the death of Frank L. Vance at Atlantic City, on Dec. 2. He had gone to Atlantic City about two months ago to recuperate, having been in somewhat poor health for over a year, but no one

suspected his condition to be at all serious.

Mr. Vance, though not old in years, was old in association with lake trade and many men, now prominent factors in the business, served under him in their early days. Many men, now managing fleets of their own, sailed vessels for him in early life. So intimately was he associated with the trade in all its branches that his death is a personal sorrow to hundreds in the various cities along the lakes. His work, continuing over a long period of years, brought him into close contact with all branches of the trade. So firmly established was his reputation for square dealing that his death is a distinct loss to the community. Though only 61 years old, he had lived in Milwaukee for 54 years and with his brother David Vance had founded one of the best known marine insurance and vessel agencies on the lakes. This firm was known as David Vance & Co., of which he was vice president. A few years ago the Vance & Joys Co. was formed to handle vessel property of which Mr. Vance was treasurer.

Mr. Vance was born in Sackett's Harbor, N. Y., Sept. 9, 1847, and was taken by his parents to Milwaukee in 1854. His first occupation was that of bookkeeper, but he soon identified himself with the lake business, in which he became one of the leaders as well as one of the most influential and best respected citizens of his adopted town. He is survived by his widow, by a sister, Miss Hattie Vance, of Milwaukee, and by three brothers, David Vance, of Milwaukee, Louis Vance, of California, and William Vance, of Racine, Wis.

WIRE ROPE.

The Upson-Walton Co., Cleveland, have just issued a third in their series of catalogs devoted to the products that they handle. The present catalog is on wire rope. This catalog is quite complete, one page is devoted to suggestions on its use, another page gives instructions for splicing it. Complete information is given of the various ropes handled, including diameter, weight, approximate strength in tons, and the price. A table is also published giving the tensile strength of wire rope compared with Manila rope. The catalog is very clearly illustrated and will doubtless be preserved. A few years ago Mr. J. W. Walton, of this firm, wrote a book on rope, tracing its history as far back as records exist. He produced a highly interest-

ing volume, now greatly appreciated by those fortunate enough to possess a copy.

AROUND THE GREAT LAKES.

The sale of tickets on the Detroit & Cleveland line, between Cleveland and Detroit, was discontinued on Dec. 5.

The steamer Harlem, bound down, went aground about a quarter of a mile southeast of Bar Point light-house. She was subsequently released by the tug Harding.

The schooner Houghton, belonging to the Wallaceburg Sugar Co., sank while attempting to cross Lake St. Clair with a cargo of beets. The Houghton was being towed by the tug Acacia.

The two steamers building for the Pittsburg Steamship Co. at Lorain will be named in honor of Alva C. Dinkey, president of the Carnegie Steel Co., and E. J. Buffington, president of the Illinois Steel Co.

The steamer John Stanton, bound down with grain from Fort William, went ashore at Iroquois Island, Lake Superior. The lighter Reliance, in tow of the tug Booth, were sent to her assistance, Capt. Frank Root, of the Great Lakes Towing Co., and Capt. C. H. Sinclair, of the underwriters, accompanying the wrecking crew. It is reported that the Stanton's No. 1 tank is full of water.

The steamer Mohawk, which went ashore on Big Shoal, was released on Dec. 6 and taken to Detour, after about 500 tons of her miscellaneous cargo was lightered by the tug Favorite and lighter Reliance. The Mohawk lost her wheel and rudder when she went on the rocks and two of her tanks were punctured. She was patched up and towed from Detour to Detroit by the tugs Favorite and Sabin.

James H. Mancor, principal surveyor for the United States for Lloyds register of shipping, visited Cleveland this week. He called upon President James C. Wallace of the American Ship Building Co. and expressed his great surprise at the extent of lake shipping. He was also impressed with the types of vessels evolved, so unlike any to be found elsewhere in the world. He thought the rules of the Great Lakes Register to be as satisfactory as any that could be desired for the classification of this peculiar form of construction. It is quite likely that in his next report to headquarters he will make some comments on lake practice as he observed it.

Naval Architects and Marine Engineers.

Following Naval Constructor D. W. Taylor's paper, Prof. Herbert C. Sadler of the University of Michigan read his paper on the subject "Further Experiments upon Longitudinal Distribution of Displacement and Its Effect Upon Resistance" as follows:

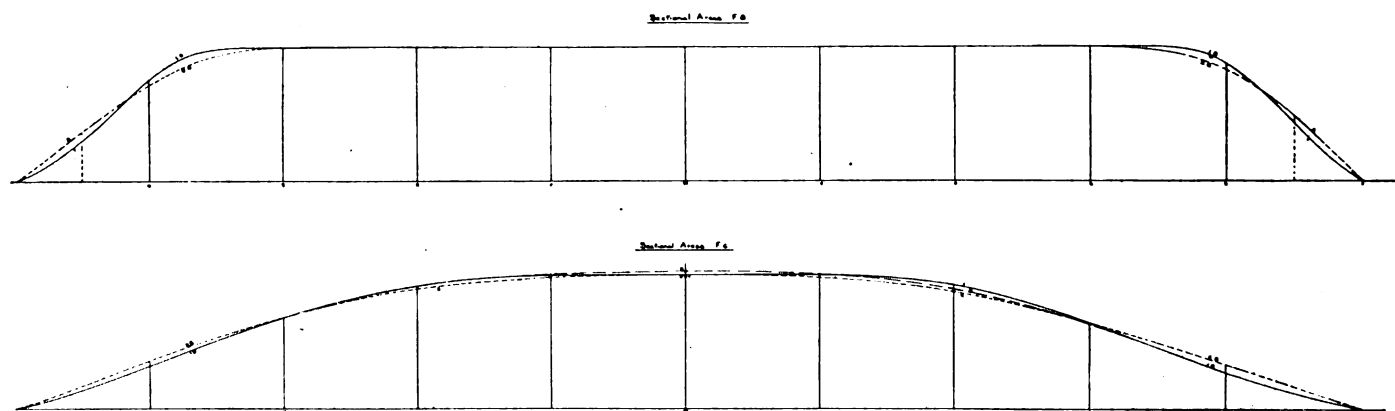
In a paper read before the society last year the results of some experiments upon resistance as affected by distribution of displacement, were given for one form of 0.73 block coefficient. Since that time similar experiments have been carried out upon the same general lines, for finer and fuller forms, the particulars of which, including those of last year (F7), are given below.

by parallel middle body are marked 1B and 1S, and the fuller bow and stern with no middle body, or, in the case of the fullest type, a reduced middle body 2B.2S. Combinations of the two, such as the fine bow with the full stern, are distinguished by the letters 1B.2S. In each case four models were made representing all the combinations possible with the given curves of sectional areas.

Dealing in the first place with the fullest form F8, it will be noticed that there is not much scope for very great variation in form owing to the shortness of the ends. In the models tried the difference between the two extreme forms is represented by an in-

abrupt shoulder where the lines run into the middle body. In fact, in the form with the finer ends, the length could be reduced about 2 per cent at each end by "snubbing," with little or no effect upon the resistance. It will also be noticed that although the angle of entrance at the extreme end is much less in form with the finer ends, the real mean angle of entrance over say one half of the fore or after body, is actually less in the form with the fuller ends.

Reference to the wave profiles for the different forms (Plate 6) will show what happens at the ends, and will explain some of the difference between the resistance curves for 1B.1S and



PARTICULARS OF MODELS.						
Series No.	L			Coefficients		
	B	d	d	Block.	Prism.	Mid ship.
F6 (1)	8	2.142	17.142	.6533	.6778	.9638
F7	8	2.142	17.142	.733	.760	.964
F8	8	2.142	17.142	.855	.869	.984

The curves of sectional areas and body plans are shown on Plates 1, 2 and 3. In each case the same general idea has been followed, viz., the dimensions, displacement and coefficients have been kept constant for each series and the distribution of displacement modified by altering the curve of sectional areas. In the models where a parallel middle body was used, this was held rigidly for the distance shown on the curve of sectional areas, and was therefore "actual parallel middle body" and not "virtual middle body." The general shape of the sections was also kept constant. The various models were tried at three different draughts and some at different trims, but those for the maximum draught only are given, as the resistance curves for the other draughts follow the same general form.

The fine bow and stern accompanied

crease of 10 per cent in length of middle body.

The curves of residuary resistance per ton of displacement are shown on plate 4 for the various combinations of bows and sterns, and the comparative results in the following table:

COMPARATIVE RESIDUARY RESISTANCE.

V	1B.1S.	1B.2S.	2B.1S.	2B.2S.
\sqrt{L}				
.5	100	80	84.5	56
.55	100	77.7	79.0	50.6
.6	100	74	72	53.0

The form with the fine ends and longer middle body is decidedly the worst, while that with the shorter middle body and fuller ends is the best. Between the combinations of ends there is little to choose. The results for this form are therefore the opposite to those obtained for the finer forms, but the explanation of this is probably as follows. Owing to the shortness of the ends it is possible to obtain only a very short length of line at the extreme end, which can be reduced in fullness. This reduction must be immediately followed by an increase and, consequently, a rather

marked secondary bow wave in the forms with the fine ends, at the point where the fore body begins to run into the middle body.

The two forms of stern show somewhat the same effect, a marked hollow occurring in the fine stern type, in about the same relative position from the stern.

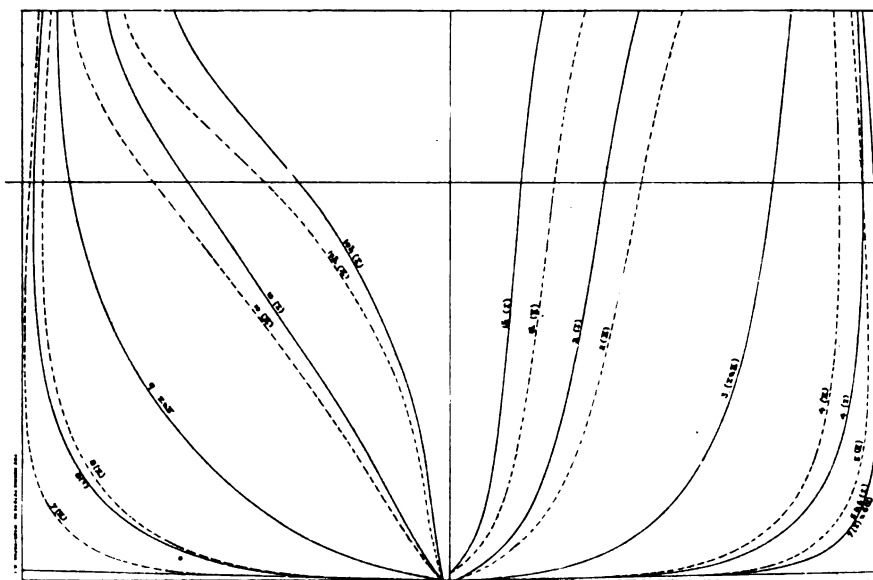
Referring now to the finer form F6 the curves of sectional areas marked 1B.1S. and 2B.2S. represents the various modifications in the different models; the form with the fine end having 20 per cent., and that with the full ends no middle body. The curves of residuary resistance are shown in Plate 5, and the comparative results in the following table:

COMPARATIVE RESIDUARY RESISTANCES.

V	2B.1S.	2B.2S.	1B.1S.	1B.2S.
\sqrt{L}				
.75	100	86.5	62.6	64.5
.8	100	87.6	61.7	63.5
.85	100	91.2	71.7	69.5

In this case the form with the full bow shows a marked inferiority to

Model F.6.



that with the fine bow, within the range of speed suitable for this form. At higher speed length ratios the somewhat easier form represented by 2B.2S seems to show up a little better than the one with the finer bow. The fuller and easier after body also seems better than the finer form. On the same basis of curve of sectional areas in the above series, two more models were made, but of greater beam. The midship sections are shown on Plate 7. No. 2 had exactly the same curve of sectional areas as No. 1, the beam only changed. In No. 3 the same beam was taken as No. 2, but the area of the midship section was increased to compensate for the reduction displacement due to cutting away the form between sections 3 and 5 (Plate 1). Nos. 1 and 2 have therefore the same prismatic but different block coefficients, while Nos. 2 and 3 have the same block but different prismatic coefficients. The lines at the extreme ends in all cases are the same.

TABLE OF PARTICULARS.

No.	$\frac{L}{B}$	$\frac{B}{d}$	$\frac{L}{d}$	Block.	Prism.	Mid-ship.
F6. 1	8	2.142	17.142	.6533	.6778	.9638
F6. 2	7.272	2.142	17.142	.594	.6778	.874
F6. 3	7.272	2.142	17.142	.594	.664	.895

The curves of residuary resistance are shown in Plate 8 and the comparative results in the following style:

COMPARATIVE RESIDUARY RESISTANCES.

$\frac{V}{\sqrt{L}}$	F6. 1	F6. 2	F6. 3
.8	100	96	96
.85	100	95.4	92.3
.9	100	92.3	81.2

Up to a speed-length ratio of 0.8

there is very little to choose between the three forms, but above that speed the effect of widening and fining the midship section is apparent by comparing curves 1 and 2. By reducing the prismatic coefficient still further as in No. 3 there is a further reduction in residuary resistance. In fact the curve of sectional areas of No. 3 has all the good and none of the bad points of Nos. 1 and 2, the ends being fine and the lines toward the middle of a gradual character with no sudden change.

In practice, especially where the mold system is used, it is of advantage from a builder's point of view to

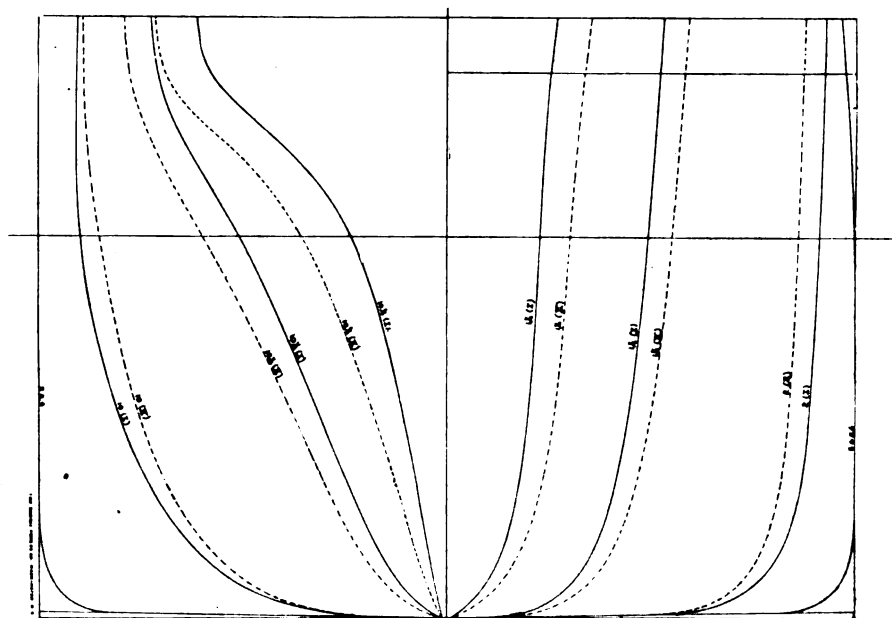
have as much parallel middle body as possible. In the above series and in those given last year, this point has been kept in view. The three series, F6, F7, and F8, represent a range of models of 0.6 to 0.85 block coefficients.

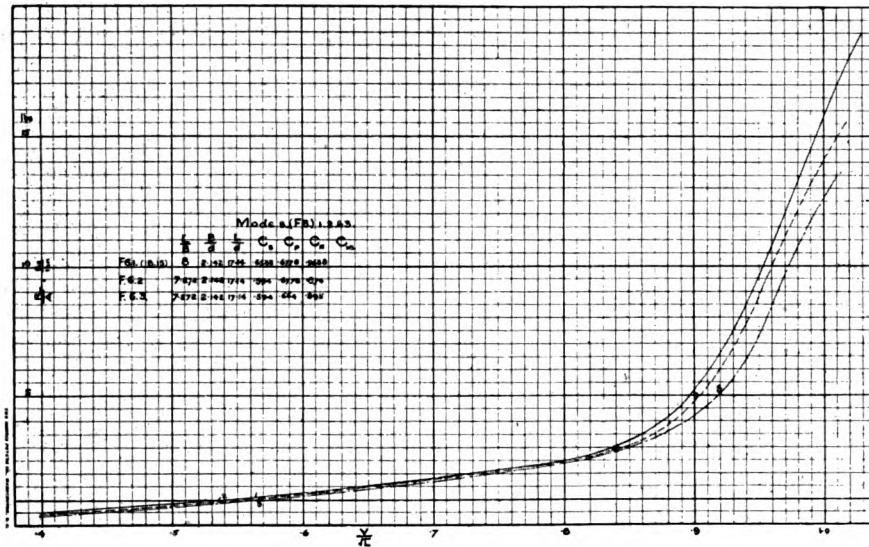
An investigation of the curves of residuary resistance shows that in the first place it is of decided advantage to use a parallel middle body and a fine bow up to forms with about 0.8 block coefficient. Beyond that degree of fullness, the reverse is true, owing to the reasons discussed above.

There is no doubt that further improvements in performance may be obtained by fining the bilge diagonal, especially in the neighborhood where the parallel middle body joins the ends. In such cases, however, although there would be a virtual middle body, the actual middle body would more or less disappear. Further experiments upon this point are now under investigation. It may be of interest to note that in all the forms tested, where the ends were fine and accompanied by a somewhat abrupt change to the parallel middle body, the resistance at very low speeds always appeared to be higher than in those where the ends were fuller and the forms more gradual.

In any form there seems to be a certain combination of fineness of water-line forward and curve of sectional areas which will give the best result. In other words, in the neighborhood of the water-line it is of advantage to keep the form fine but at some distance from the bow, there is

Model F.6.





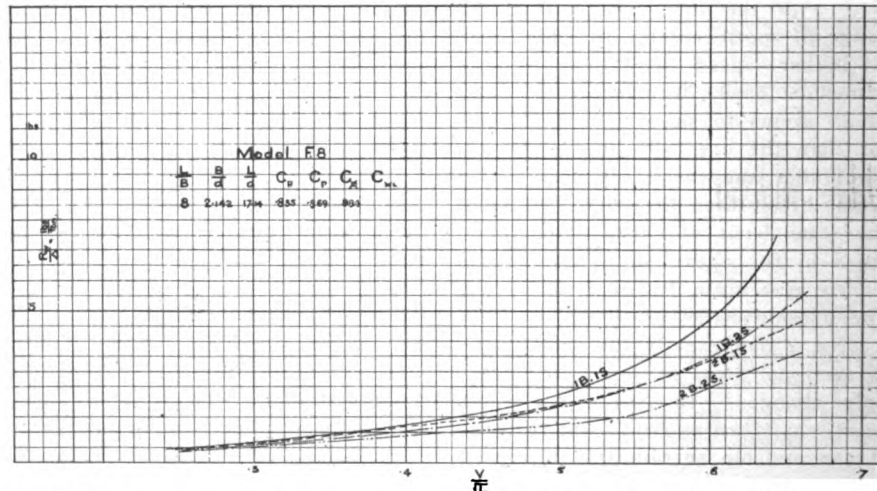
what might be called a "governing section" to the form, which section should not be too full on the diagonal. Reference to the steam lines around models which were shown by Mr. Taylor last year, seems also to bear out the foregoing.

As a further illustration of this point, in the model of the F6 series with the full ends and no middle body (2B.2S), the same curve of sectional areas was held, but the fore body changed by fining the water-line and club footing the sections forward. The result at speed length ratios of 0.75 to 0.85 was a diminution of the residuary resistance of about 9 per cent; while in the form with the still finer water-line forward (1B.2S) the average over the same speeds was about 25 per cent.

So far as the after body is concerned, the most advantageous form appears to be one where the curve of sectional areas is of an easy charac-

ter somewhat full on the water-line, and with an easy bilge diagonal.

The influence of shape of section upon the resistance when the curve of



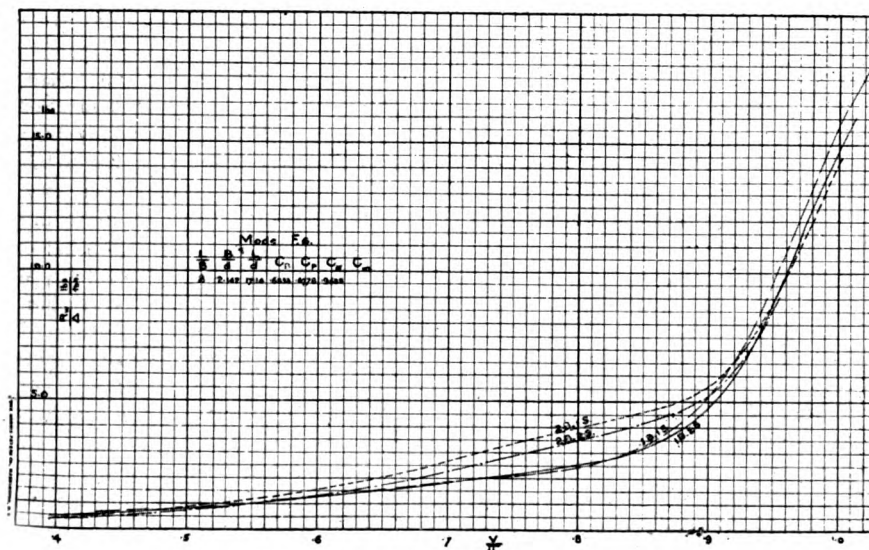
sectional area remains the same, has not, however, been investigated, but some experiments are being made up-

on this point and will be submitted at a later date.

DISCUSSION.

Capt. W. Hovgaard: I am glad to see that the example set by the tank in Washington is followed also by the tank which is under control of Prof. Sadler, of publishing the results of scientific experiments, such as has been done so literally and generously by the authorities in charge of the tank in Washington.

I have no doubt the results given would be of interest not only to those who study the problem from the scientific point of view, but also the practical shipbuilders. I think it comes as a great surprise to most of us that the change in midship section coefficient has such a small influence on resistance, provided the area is kept constant. I think, like Mr. Taylor, that the explanation is due to the fact that the finer coefficient are accompan-



ied by greater dimensions of the transverse direction.

I am not quite clear whether the section for the different models given, for example, in table No 1, corresponding to different displacements and of the same midship section coefficients,—whether they are derived in such a way that the corresponding sections are similar, strictly similar. I see that it is stated that the proportion to beam and draught is the same. It does not follow from that that the section should be similar.

The President: I think we might expect some remarks from Prof. Sadler on Mr. Taylor's paper.

Prof. H. C. Sadler: I am sure we all welcome this paper of Mr. Taylor's as throwing additional light on a subject on which some of us have had rather erroneous ideas.

The series of types presented by Mr. Taylor represent what might be called the broader type of ship, that is, the

ratio of breadth to draught, 2.9, is perhaps larger than met with in the ordinary merchant ship, but I have no doubt that the same thing is true in the case of the somewhat narrowed type. I should like to ask Mr. Taylor if he does not think that is the case.

I may say in a few isolated models we have tested, in the tank at Michigan the results obtained confirm those obtained by Mr. Taylor. I tested 45 relatively broad models of excursion steamer type, and it has been rather a source of surprise, at first, to find how easily the wide models with the sharp midship section rise.

I think the experiments also emphasize the fact, which is more or less surprising to most of us, that the prismatic coefficient is after all the thing which has the greatest influence on the speed of the vessel, provided you get the prismatic coefficient suitable for the size and speed of the vessel, that is what you must aim for. If you compare the two sets of residuary resist-

some announcement from your institute, in regard to the tank, which will be of benefit to eastern ship builders. Are you prepared to leave that to Harvard University?

Prof. C. H. Peabody: I have nothing which I think is of special importance to say at this time. I will not say I have no hopes; I do not wish to convey that meaning.

The President: Mr. Packard, may we hear from you?

A. A. Packard: I think these results of Mr. Taylor's constitute one of the most extremely satisfactory papers we have had. We have so many worries, that he has shown us we need not worry about the shape of section, given a certain length and certain fore and aft curve areas, we can have anything we please in reason in the midship section. I think that is an extremely important discovery. I believe Mr. Froude predicted that result a good many years ago, and then the experiments of Mr. Rota, at Spezzia, rather shook our con-

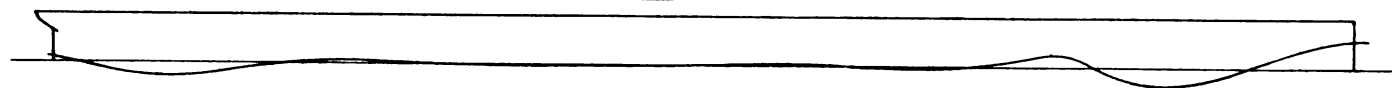
given area, when we compare the curves of resistance of the vessels in Table 1, the last three and the first three in the table, where there is an actual difference in the midship section area, in the three vessels of the same displacement, the same displacement having a coefficient of about .80 per cent. I hope Mr. Taylor will follow up this line, and give us some information of the same sort, when following out the effect of the different variations of the midship section, which he proposes, where he keeps the bottom constant and increases the pitch, and also give information as to his opinion, from the results of other experiments, as to the effect of the different cylindrical coefficient on resistances at different speeds.

Of course, the work Mr. Sadler is doing is of a similar nature, and the two lines of investigation really go together, and provide us with just the kind of information which we want, which sets aside so much speculation and makes so many things clear to us

WAVE PROFILES.

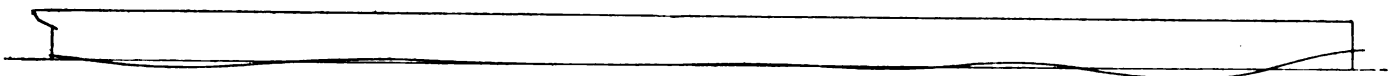
Model F. 19.15

$\frac{L}{\lambda} = .68$



Model F. 28.25

$\frac{L}{\lambda} = .67$



ance curves for the 5-6 and 6-8 prismatic coefficient for a speed length ratio of anywhere from .8 to 1, you will see there is a tremendous difference in resistance between the two curves, in fact, the residuary resistance is something about three times the case for the .68 coefficient as compared with the .56.

These experiments more or less bear out some that were made some time ago at the tank at Spezzia, Italy. I think they may be familiar to some of our members. I think the result obtained there was that the form which had the minimum wetted surface approached the form of minimum resistance, and that seemed to be borne out more or less by these experiments. Referring to the wetted surface curves, it is found these forms have about the minimum wetted surface, are about the easiest form to try.

The President: Professor Peabody, the eastern ship builders are hoping for

fidence, I think, that we could experiment as much with the midship section as we would like to.

Mr. Taylor shows us if we can give a definite area to that midship section, that we can do anything we please with it. I think that is a most interesting and valuable result. The fact that there is not much more to be said about the paper, is perhaps the greatest compliment which we can pay to the result of these experiments.

Mason S. Chace: The more information of the kind given in these two papers which we get, the more we want, and I certainly hope these papers will be followed up by the development in the line of investigation indicated. I am particularly interested in the remark Mr. Taylor makes on page 6, with regard to the cylindrical coefficient on the resistances at different speeds. It is very interestingly brought out in the paper, that irrespective of the shape of the midship section, of a

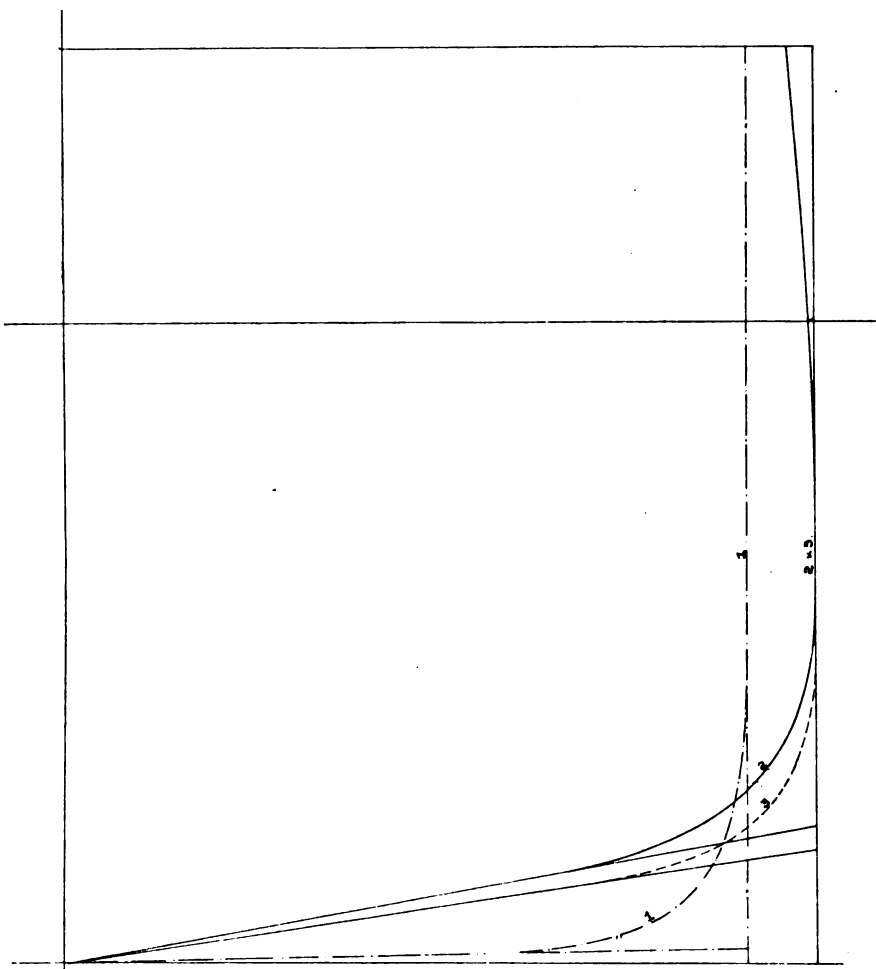
which we have been guessing about and deciding as matters to be determined by the "eye" and "judgment," which the naval architect is supposed to possess so much of, but which he does not always possess as much of as he would like to possess.

Clinton H. Crane: I feel this paper of Mr. Taylor's bears out in a measure what has been believed for a long time, and in a way bears out what the people on the other side of the water have been doing. I think there is more difference shown in Mr. Taylor's paper—in reading the various parts of the paper—between a full and a fine section, than Mr. Taylor himself emphasizes. I regard it as extremely important that the full section is more easily driven than a thin section, because a full section is what we are all driven to by the depth of our harbors.

I suppose the first full section high speed boats were built across the channel, where they are held down by a

Midship Sections

Fe. 1, 2, 3, 5



limit of draft of about 9 ft., and a great many tank experiments were made by the Denny's, and their experiments show that the flat bottom, deep section actually drove easier than the other type, and I think it is pretty generally agreed that it is better to have full midship section for easy driving. Of course, for sea-going work other considerations sometimes come in, especially where we are using water-tube boilers and have a light displacement. We may then wish to use a finer section in order to keep a reasonable sea-going draught.

But I cannot express too strongly how valuable to all of us investigations of this sort are, and I think we all owe a debt of gratitude to Mr. Taylor for publishing data as he does, exactly what he himself gets in the tank, and in giving us a sort of free-digested pabulum, such as Mr. Froude usually publishes. He gives the other man an opportunity of making his own analysis, and I think all of us will appreciate, from

the paper presented to the society, of being able to know what was actually done.

Joseph H. Linnard: It is interesting to note one thing, that is deducible, possibly, from the curves published by Mr. Taylor, and not directly touched on by him, and that is, to see it necessarily follows, by analysis of these curves, that for high speed vessels which are of a speed length ratio of about 1, or thereabouts, which the ordinary high speed, large size vessel will accomplish, it is really necessary to have a hollow bow line in order to obtain a minimum resistance.

There has been in the past a great deal of agitation as to the relative qualities of vessels which follow straight bow lines, and the common opinion among sailors appears to be that the hollow bow line is very undesirable on account of the alleged pitching tendency of such vessels. Mr. Froude's experiments published in the transactions of the British Institution of Naval Archi-

teets indicated that the commonly accepted idea in this matter was very exaggerated, and I believe those with whom I have conversed, who have given careful attention where it was possible to the difference between hollowed bow vessels, and straight bow vessels, have considered there is little, if any difference, and this is rather an important point, since it indicated that the hollow line is essential for certain types of high speed vessels. Perhaps some of the sea-going officers here could state whether their experience in the matter coincides with that view.

The President: If there is no further discussion we will call on Mr. Taylor to close the discussion on his paper.

D. W. Taylor: In reference to Prof. Hovgaard's remarks as to the method of derivation of the models of the same cylindrical coefficient, and different displacement, they would derive the larger from the smaller by increasing each transverse and vertical dimension, that is, increasing each section and span in all directions the proper amount will give the enlarged displacement desired, the length remaining unchanged.

In connection with Prof. Sadler's remarks, with regard to the experiments which applied to one ratio of beam and draught, he is correct—we adopted that because it was the same ratio as in another series which we had been experimenting with for another purpose, representing lines of broader type in the common merchant service. The ratio of beam to draught 2.9 is closer to the ordinary man-of-war practice. I think, with the results obtained, that the broader type would apply practically to any reasonable variation of steam to draught. I have no reason to believe that would be materially modified.

I might point out, however, that the problem which would arise in practice is not so much the problem which is investigated here—it was necessary to investigate one problem at a time—the problem more apt to arise with the naval architect is that he will want to hold the bottom constant and increase or decrease his draught. There you have two complications, because you change the ratio of beam to draught. If you take the case of a fine midship section with deep draught, and then if you decrease the draught, keeping the area of midship section constant, you increase the area of midship coefficient, which these experiments indicated would be favorable as regards speed, but you also increase proportion of beam to draught, and a number of other experiments may indicate that is a factor tending to increase

resistance; that is, if you test that factor alone.

The question is complicated—there are a number of varying factors entering into it, and it was the attempt of these experiments to investigate one factor alone, and if possible to wipe it out and cease to worry about it, as Mr. Packard pointed out.

In reference to Mr. Crane's remarks, that the naval architect is generally driven to full sections, that is quite correct, as a general thing, and I might instance the history of all our battleships. When we began building battleships, it was the almost universal practice abroad to adopt a rather fine midship section coefficient, a round coefficient, in the neighborhood of between .80 and .85. On account of the necessities of the ports we were compelled from the very first to adopt the least midship section coefficient. We applied that coefficient to nearly all of our later ships, and we are coming pretty close to the square box. But we had no reason to believe, from the trials of ships that the full midship section did not drive very well, and it is pleasing to find these ideas confirmed in the experiments.

One thing which led up to the experiments was an interesting case, a case of a vessel that you are acquainted with, Mr. President—we thought it was desirable to give the vessel greater draught, and to adopt a fine midship section coefficient. We made experiments with the full coefficient and fine coefficient and found that the full coefficient, keeping the length and displacement unchanged, gave a little easier, the difference was not great, but the fine coefficient was finally adopted because otherwise the draught would be reduced below the limits that were desirable in a sea-going vessel. It was thought desirable to give a hold upon the water. That is a condition which does not often occur. That was one of the occurrences which really started us on this line of investigation.

With reference to Mr. Linnard's remarks, regarding hollow and straight water lines, I expect many of the members will probably remember the controversy which took place in a foreign society on that subject, as the result of which Mr. Froude made experiments which appear to indicate that the pitch, excessive pitch, was largely a question of synchronism, and that there appeared to be no reason to expect that the hollow vessel would synchronize more frequently than the straight line vessel. That was controverted by a number of sea-going officers, as regarded British naval vessels, and I may remark that at about the time of this agitation a num-

ber of English vessels were built with hollow lines which had greater length than hitherto, and not more freeboard, and they were probably wetted on that account and not necessarily on account of the hollow lines. The English wish to be thorough, as you know, and made a full scale experiment with two armored cruisers of about 14,000 tons. One vessel was built with hollow water lines and the other with straight water lines, the intention being to test on a full sized vessel the difference between the hollow and straight water lines. The hollow line vessel beats the other, with the same power, by at least half a knot, and I am not sure but what it was greater. Several of the gentlemen referred to the question of cylindrical or longitudinal coefficient, and that is undoubtedly a vital factor as regards steam. I call your attention to the fact that Prof. Sadler's experiments and my experiments overlap slightly and really agree very closely. One advantage of the method of plotting which he uses, is that you are able to compare different sizes of models at once. For instance, in Fig. 6 he does not give his coefficient of flatness, but it is somewhat greater than the largest one I use, 1.20 in round numbers. He has some vessels with the cylindrical coefficient and shape under .668 and you will find in my figures taking a speed length ratio of 1, the residuary resistance in pounds per ton is in the neighborhood of 15 lbs., a little under that. If you take the large figure in his paper you will find that the free models which he gives runs up to that speed length ratio, No. 3, or the fast one has a less cylindrical coefficient, an efficiency of .664 instead of .668, and the other two have a cylindrical coefficient of .6778 and .6778. One falls a little bit above 15 lbs. to the ton, residuary, and the other a little below. They are in substantial agreement. I should point out that his model has a slightly greater coefficient of flatness. It was pointed out by Mr. Sadler and Mr. Linnard and other gentlemen, as to the peculiar effect of longitudinal coefficient. If you compare Figs. 5 and 6 you will see that Fig. 5, which refers to the fine ended model, shows in cases at about the speed length ratio of 1, almost one-third residuary resistance only, as compared with the residuary resistance for the same displacement of length of the model referred to in Fig. 6, but it happens that at the speed length ratio of 1, you are very close to the hump in the curve, and the full-ended model has a pronounced hump. The thin-ended model does not have such a pronounced hump; in other words, you can get rid of the first pronounced

hump by fine end, but it has the effect of exaggerating the second hump, which occurs at about 6.5 knots, for a 20-ft. model. The full-ended model has the first hump very pronounced, but having once climbed to it, the second hump is not so pronounced. You will find, as stated in the paper, that full-ended models at extreme speed offer less resistance than the fine ended, although at three-quarter speed they offer less. Take the coefficient 52, at 1.8 speed length ratio, the residuary resistance is between 75 and 80 lbs. to the ton. For the same coefficient with the fine-ended models, the residuary resistance is between 80 and 85 lbs. to the ton. It is climbing up. If the models were pushed to higher speed, still the full-ended model would show up better.

The question of the influence of cylindrical coefficient is quite a complicated one, and one we have done a great deal of work upon, and we have some ideas, got some results, which I hope to publish some day before very long, but generally speaking we have found that the primary factor affecting residuary resistance, when you get up to speeds where the residual resistance is of importance, is the question of the length and displacement, that is to say, the length and displacement is the primary factor. The next important factor is the question of cylindrical coefficient, which in no sense is a question of our midship section. Large cylindrical coefficient means small midship section area, and vice versa.

Speaking broadly, for speeds up to the square root of the length, you cannot make the longitudinal coefficient too fine, that is, the best longitudinal coefficient is as low as 50 per cent. Then, as you increase the speed, the best longitudinal coefficient begins to rise until, when you get to a very high speed, say twice the square root of the length, which is a speed for vessels to obtain, the best longitudinal coefficient appears to be in the neighborhood of .64 and the differences are very great at the speed length ratio of about 1.

As shown in this paper the residuary resistance may vary three times, by changing the area of midship section, and practically changing your line, in changing the general type of section or ratio of displacement length. When it comes to a question of excessive speed, about twice the square root of length, I must say we do not know, but I am inclined to think it will not make much difference, because when you get to excessive speed the model begins to climb out of the water and everything changes, and the model takes what it considers the best trim.

As Mr. Linnard stated, the full mid-

ship section almost drives you to the hollow water line, and I think there is no doubt, as proved by model experiments and full scale experiments for water conditions, that the hollow line is better than the straight line, when you get the very high speed. But very few of our vessels seem faster than the square root of the length.

The President: The most satisfactory feature of Mr. Taylor's conclusion is that, as affecting the ship builder, they tend to economical construction, and fortunately eliminate a good many cranky notions which often unnecessarily increase the cost of construction without any commensurate result.

QUESTIONS FOR MASTERS AND MATES.—NO. 20.

295. Why it is that the variation is the same for all vessels and on all points of the compass while the deviation is different for different vessels and different nearly on all points of the compass?

296. The true course is N by E $\frac{1}{2}$ E and the correct magnetic course is N $\frac{1}{4}$ W, how much is the variation and which way is it?

297. The correct magnetic course is SE $\frac{1}{2}$ E and the true course is ESE, what is the variation and which way is it?

298. The true course is SW $\frac{1}{4}$ S and the correct magnetic course is S 50° W, what is the variation and which way is it?

299. The correct magnetic bearing of a range is NNW $\frac{1}{2}$ W, the variation is 6° westerly, what is the true bearing of the range?

300. The variation is 4° easterly, what should the north star bear by compass, or what is the correct magnetic bearing of the north star when the variation is 4° easterly?

301. What is the correct magnetic direction of Cleveland piers?

302. A correct magnetic bearing of the north star was N 8° W, what is the variation and which way is it?

303. What is the correct magnetic bearing of the Chicago Four-Mile Waterworks Crib light when in range with the light on the southeast end of Chicago breakwater?

304. Is it necessary in order to make good courses to know your distance off at turning points in your course? How would you determine this distance?

305. In running along with the land in the night time, how could you tell whether you were working in or out by lights on the shore? Explain just how you would control the situation.

306. On a straight course from Southeast shoal lightship to Buffalo, in thick weather, having run out your time to Long Point, and cannot hear Long Point fog whistle, how would you locate yourself?

307. If you are making 11 $\frac{1}{4}$ miles per hour, how long does it take you to run a mile?

308. Your boat makes 11 miles an hour with the engines turning up 85 revolutions per minute, how much would the engine have to turn up to make 6 miles per hour?

309. Turning up 90 turns, your boat makes 11 $\frac{1}{4}$ miles, how fast is she running when the engine is turning up 75 revolutions per minute?

ANSWERS TO QUESTIONS FOR MASTERS AND MATES.—NO. 20.

295. Variation, being due to the earth's magnetism, is external to the ship's hull and affects alike all compasses in the same locality and on every heading of the ship. Deviation is caused by the magnetism in the iron used in the construction of the ship or her equipment, and depends for its amount upon the quality, kind of iron and its position and distance with regard to the compass needle. As the compass card does not turn with the ship when the course is altered, the metal in the ship or her equipment assumes new relations to the compass needle and as a result the deviation changes whenever the course is altered to any extent.

296. 1 $\frac{1}{4}$ pts. Ely.

297. 1 $\frac{1}{2}$ pts. Wly.

298. $\frac{3}{4}$ pts. or 8° Wly.

299. NW x N.

300. N 4° W.

301. NNW $\frac{3}{8}$ W.

302. 8° Ely.

303. The Chicago Four-Mile Waterworks Crib bears S 60° E or SE x E $\frac{1}{4}$ E from Chicago Harbor light.

304. Yes, by taking two bearings of an object such as a lighthouse at the turning points.

305. By taking bearings of lights along the shore and ascertaining if one was the requisite distance off shore. On the course from Southeast Shoal lightship to Conneaut would take bearings of Fairport and Ashtabula lights or any other known lights ashore. If the weather was thick would have frequent recourse to the lead.

306. By soundings.

307. 5.3 minutes.

308. 46.3 revolutions.

309. 8.75 or 8 $\frac{3}{4}$ miles.

PERSONAL.

Mr. Grant W. Spear, who for many years has been vice president of the Dearborn Drug & Chemical Works at Chicago, took charge Nov. 1, of the general eastern offices of the company, at 299 Broadway, New York City, as vice president and eastern manager, Mr. McVicker being no longer connected with the Dearborn company.

Capt. Pruett, president of the American Association of Masters, Mates and Pilots, is visiting the local associations at Seattle, Portland and San Francisco. Capt. Pruett says his visit is purely fraternal and does not mean that there will be any demands made by the association to the employers.

Capt. Pritchard, commander of the Cunard liner Mauretania, is taking a well-deserved rest among the scenes of his early youth in North Wales while the repairs to his vessel are being effected.

Capt. W. B. Turner, who has succeeded Capt. Watt as commander of the Cunard liner Lusitania, was the recipient of many congratulations on the occasion of his first voyage with his new charge. Like Capt. Pritchard, commander of the Mauretania, Capt. Turner spent his early days in small craft sailing out of North Wales ports but joined the Cunarder Cherbourg in 1873 as third officer. He later returned to sailing craft again and next appears as second officer of the Cunard steamer Cephalaria, thereafter rising through many posts to the command of the steamer Caronia, from which he was transferred to the Lusitania.

The C. W. Hunt Co., West New Brighton, N. Y., have just issued a little catalog on Stevedore Manila rope for the transmission of power pile driving and hoisting. It is well illustrated.

BIDS FOR BUILDING LOCK AND DAM.

Bids received by Major H. Jervy, corps of engineers, United States army, at Mobile, Ala., on Nov. 17, for building lock and dam No. 16 and lock tender's house, Black Warrior river, Ala., were as follows:
B. H. Hardaway, Columbus, Ga., \$428,675
Robert C. Starrie, Philadelphia, Pa., 481,600
Dravo Construction Co., Lewis block, Pittsburg, Pa., 455,545

BIDS FOR FURNISHING LIFE BOATS.

Bids opened Nov. 18 by the lighthouse inspector at Charleston, S. C., for furnishing two life boats for light vessels Nos. 1 and 53, were as follows:
*Maurice F. Reardon, Brooklyn, N. Y., \$648
David Kahnweiler's Sons, New York, 690
Smith Boat Works, New York, 695
E. O. Hall Jr., Mt. Pleasant, S. C., 700

*Accepted.

THE BOILERS IN THE
"JAMES E. DAVIDSON"

are equipped with

6 Jones Stokers

THE UNDER-FEED STOKER CO.
OF AMERICA

Marquette Building
CHICAGO



Staybolts are dangerously reduced in strength
in the process of tell-tale drilling

HOLLOW STAYBOLTS

have the tell-tale hole rolled in the bar.

IN SERVICE

renders absolute safety and great endurance.

Send for Important Literature and Prices.

FALLS HOLLOW STAYBOLT CO., Cuyahoga Falls, Ohio
STAYBOLT IRON A SPECIALTY.

Geo. L. McCurdy

169 Jackson Boulevard

CHICAGO ILLINOIS

INSURANCE

HULLS and CARGOES

DIRECT REPRESENTATIVE OF LEADING
AMERICAN AND FOREIGN UNDERWRITERS

CORDAGE

We make good rope--the best that can be made. When you buy cordage of us you get rope that has more than thirty years of experience twisted into it. Experience in buying raw material in the world's market--experience in making (in our own mill)--and experience in advising how the rope should be used to give the best service.

If you want as good rope as we make plus our experience, write us and we shall be glad to give you the benefit of our advice and quote you prices.

THE UPSON-WALTON CO.

Dept. C, 1304 River Ave.

CLEVELAND, OHIO

Aids to Navigation

are of vital importance to vessel interests.

SCHERZER ROLLING LIFT BRIDGES

aid navigation and meet with the approval of all vessel interests, because of the wide and unobstructed channel provided for navigation, enabling vessels to pass easily and rapidly through the draw. Accidents and damages from collisions with center piers absolutely avoided.

The Scherzer Rolling Lift Bridge Co.

Main Offices: 1616 Monadnock Block,
CHICAGO, U. S. A.

Cable Address: Scherzer, Chicago.

The Martin-Barriss Co.

654 Seneca Street CLEVELAND, OHIO

IMPORTERS AND MANUFACTURERS OF

MAHOGANY

WHITE MAHOGANY

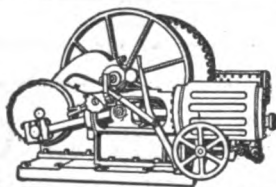
and all Native Cabinet Woods

High Grades of Kiln Dried Woods for Cabin Work and Inside Trim
WHITE OAK TIMBERS AND PLANK
Constantly on Hand and Sawed to Order on Short Notice

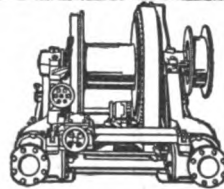
ADVERTISERS

The Star indicates alternate insertions, the Dagger once a month.

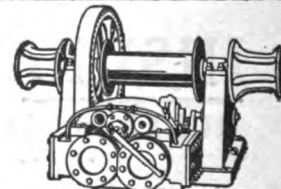
Almy Water Tube Boiler Co..	37	Douglas, G. L., Jr.....	48	Kahnweiler's Sons, David.....	45	Richardson, W. C.....	48
†American Balance & Valve Co.	—	Drein, Thos., & Son.....	45	Katzenstein, L., & Co.....	45	*Ritchie, E. S., & Sons.....	—
American Injector Co.....	11	Dunbar & Sullivan Dredging	50	Kidd, Joseph.....	49	Roberts Safety Water-Tube	37
American Line.....	50	Co.....	—	Kingsford Foundry & Machine	37	Boiler Co.....	45
American Manganese Bronze	38	†Durable Wire Rope Co.....	—	Works.....	37	†Rogers Steam Oil Separator	—
Co.....	—	Ekstrom, G.....	49	Kremer, C. E.....	48	Co.....	—
American Ship Building Co..	4	Elphicke, C. W., & Co.....	48	Knudsen-Von Kothen Mfg. Co.	51	Root, W. O.....	49
American Ship Windlass Co..	2	†Empire Ship Building Co..	—	*Le Meis Scientifique et In-	—	Ross Valve Co.....	51
†Anderson, Gilbert.....	—	Falls Hollow Staybolt Co....	35	dustrial.....	—		
Armstrong Cork Co.....	45	Fix's, S., Sons.....	50	†Linch, Chas. S., N. A. &	—	Safety Car Heating & Light-	9
†Asbestos Composition Flooring	—	Fletcher, W. & A., Co.....	50	M. E.....	—	ing Co.....	—
Co.....	—	Fogg, M. W.....	45	Lorain Coal & Dock Co.....	49	Scherzer Rolling Lift Bridge	35
†Ashton Valve Co.....	—	Fore River Ship Building Co..	50	Lundin, A. P.....	52	Co.....	—
Atlantic Works.....	50	Furstenau, M. C.....	49	McCarthy, T. R.....	48	Schrader's, A., Son, Inc.....	45
Babcock & Penton.....	49	General Electric Co.....	52	McCurdy, Geo. L.....	35	†Seneca Chain Co.....	—
Baker, Howard H., & Co.....	38	Gilchrist, Albert J.....	48	MacDonald, Ray G.....	48	Shaw, Warren, Cady & Oakes	48
Belcher, Fred P.....	48	*Gillett & Eaton.....	—	Manistee Iron Works Co.....	37	(See National Tube Co.)	—
*Boat Handling Gear Co.....	—	†Goldschmidt Thermit Co..	48	Manitowoc Boiler Works.....	37	*Shelby Steel Tube Co.....	—
Boland & Cornelius.....	48	Goulder, Holding & Masten..	48	*Marine Iron Co.....	—	Sheriffs Mfg. Co.....	43
*Boston & Lockport Block Co.	—	Great Lakes Dredge & Dock	39	Marshall, Alexander.....	48	Shipping World Year Book...	51
†Boucher Mfg. Co., The H. E.	—	Co.....	—	Martin-Barriss Co.....	35	Siggers & Siggers.....	50
Bowers, L. M., & Co.....	43	Great Lakes Engineering Wks.	12	Maryland Steel Co.....	10	Smith Coal & Dock Co., Stan-	3
Breymann, G. H., & Bros.....	39	Great Lakes Register.....	11	Mehl, Edward.....	48	ley B.....	—
Eriggs, Marvin.....	38	†Great Lakes Supply Co....	—	†Michigan Lubricator Co....	—	Smooth-On Mfg. Co.....	51
†Brown Hoisting Machinery	—	*Great Lakes Towing Co....	—	Milwaukee Dry Dock Co....	5	Speddy, Joseph H.....	48
Co.....	—	†Griscom-Spencer Co.....	—	Mitchell & Co.....	48	Starke, C. H., Dredge & Dock	39
Buffalo Dredging Co.....	39			Morse, A. J., & Son.....	45	Co.....	—
Buffalo Dry Dock Co.....	5			Nacey & Hynd.....	45	Stratford, Geo., Oakum Co....	43
Bunker, E. A.....	52			National Cork Co.....	45	Sullivan, M.....	39
†Camden Anchor-Rockland Ma-	—	Hall, John B.....	48	*National Tube Co.....	—	Sullivan, D.....	48
chine Co.....	—	Hanna, M. A., & Co.....	3	Nevins & Smith.....	49	†Superior Iron Works.....	—
Clark Wireless Telegraph &	9	Hawgood, W. A., & Co.....	48	Newport News Ship Building	6	Superior Ship Building Co....	4
Telephone Co.....	—	†Hayward Co., The.....	—	& Dry Dock Co.....	—		
Chase Machine Co.....	36	Helm, D. T., & Co.....	48	†New York Mallet & Handle	—	Thornycroft, John I., & Co... 43	
Chicago Nautical School.....	43	Holmes, Samuel.....	48	Works.....	—	Tietjen & Lang Dry Dock Co. 50	
Chicago Ship Building Co....	4	Hoyt, Dustin, Kelley, Mc-	48	New York Ship Building Co..	7	*Toledo Fuel Co.....	—
Cleveland & Buffalo Transit	51	Keehan & Andrews.....	48	†Nicholson Ship Log Co....	—	Toledo Ship Building Co....	5
Co.....	—	Hunt, Robert W., & Co.....	49	Northern Dredge Co.....	39	Trout, H. G.....	43
†C. & C. Electric Co.....	—	Hutchinson & Co.....	48	†Nugent & Co., Wm. W.....	—	Truscott Boat Mfg. Co.....	2
Cleveland City Forge & Iron	50	Hyde Windlass Co.....	51	O'Connor, J. J.....	48	Upson-Walton Co.....	35
Co.....	—	Hyner, P. D.....	48	Otis Steel Co.....	9	Under-Feed Stoker Co. of	35
*Collingwood Ship Building Co.	—			Parker Bros. Co.....	48	America.....	—
†Columbian Rope Co.....	—	†Ideal Pump Governor Co...	—	†Peckham, O. P.....	—	Vance & Joys Co.....	48
Continental Iron Works.....	2	International Mercantile	50	Penberthy Injector Co.....	52	Walker, Thos., & Son.....	3
†Copeland Co., E. T.....	—	Marine Co.....	—	Pickands, Mather & Co.....	3	*Watson-Stillman Co.....	—
Corv, Chas., & Son.....	50	Jenkins Bros.....	52	Pittsburg Coal Co.....	3	†Wilby, Carlton.....	—
Cook's Sons, Adam.....	45	Jenkins, Russell & Eichelber-	48	Quintard Iron Works Co....	50	Willcox, Peck & Hughes.....	38
Cramp, Wm., & Sons S. & E.	8	ger.....	—			†Willoughby, A. B.....	—
B. Co.....	—	Johnston Brothers.....	37			Wood, W. I.....	49
†Crescent Machine Co.....	—						
Curr, Robert.....	49						
Dake Engine Co.....	2						
Davey, W. O., & Sons.....	43						
Delany, P., & Co.....	37						
Detroit Ship Building Co....	4						
Dixon, Joseph, Crucible Co...	43						
Donnelly Salvage & Wrecking	45						
Co.....	—						



AUTOMATIC TOWING MACHINES
The Latest and
the Best
Positively guaranteed



DOCKING ENGINES
Mooring Winches
Latest Improved
Types



HOISTING ENGINES
Of all kinds and sizes
and for all purposes
especially for ship use

FOR THESE AND OTHER WELL KNOWN SPECIALTIES ADDRESS ALL INQUIRIES TO
THE CHASE MACHINE CO. ENGINEERS AND MACHINISTS CLEVELAND, O.

THE ROBERTS SAFETY WATER-TUBE BOILER CO.

Manufacturers of
High Grade

Marine Water Tube Boilers

Generators of the Highest Quality of Steam

OVER 1500 IN USE

Send for circulars
and stock sheet

MAIN OFFICE

39 Cortlandt St.

New York City

Phone 599 Cortlandt

Works: Red Bank, N. J.

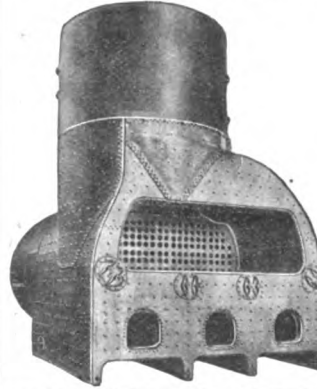
Phone. 49 Red Bank

Cable Address

"Bruniva"

MARINE BOILERS.

MARINE REPAIRS



Newburgh Steam
Boiler Works

P. DELANY & CO.

NEWBURGH, N. Y.

Geo. R. Ray, Pres. Thomas Ray, V. P. & Treas. J. R. Ray, Sec'y.

Manistee Iron Works Co.

Builders of

HIGH-GRADE MARINE ENGINES,
BOILERS AND PUMPING MACHINERY

Did It Ever Occur to You

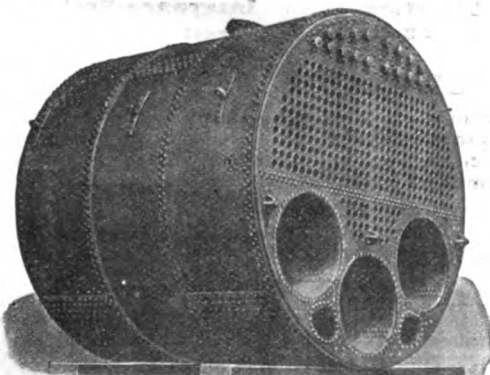
that we make the best Vertical Single Acting Steam
Bilge Pump in the world? We do—and the price is
right, too.

SEND FOR CUT AND DESCRIPTION

MANISTEE,

MICHIGAN

Modern Marine Boilers



Write

Johnston
Brothers

Ferrysburg,
Michigan

350 STEAM
VESSELS

Now Equipped With

ALMY'S PATENT

SECTIONAL

Water Tube Boilers

Bear Evidence of Their

Excellent Qualities

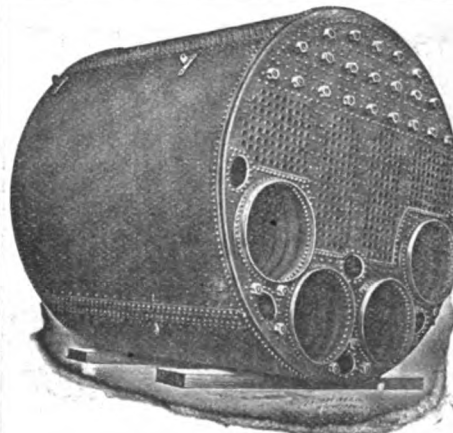
**ALMY WATER-TUBE
BOILER CO.**

PROVIDENCE, R. I.

MARINE BOILERS

MANITOWOC BOILER WORKS
COMPANY

MANITOWOC, WIS.



MARINE
BOILERS

OF ALL TYPES

KINGSFORD
FOUNDRY &
MACHINE
WORKS,

Osteo. N. Y.

CLASSIFIED ADVERTISING SERVICE

STEAMER AND CONSORTS FOR sale. For the purpose of closing up some estates, the Pawnee Boat Co. offer the steamer Pawnee and consorts, M. E. Orton, J. R. Edwards and Wm. A. Young for sale. Now laid up at Port Huron, Mich. Address H. McMorran, Port Huron, Mich.. Lum-ber capacity of the tow, t-½ million.

FOR SALE. ESPECIALLY well constructed steamer, 115 x 24 x 7, built 1897—steel. Engines 12 x 24 x 18, comp. gross tonnage 234, light draft, elec. lights, steam heat, state-rooms, everything in first class order. Need larger steamer. Address Box 219, Smyrna, Del.

MAR REV Dec 4 ALLABOU STEAMER FOR SALE. FOR the purpose of closing up some estates, the Mills Transportation Co. offer the steamer Gogebic for sale. Now laid up in Buffalo. Address H. McMorran, Port Huron, Mich.

ENGINEER OFFICE. U. S. ARMY. Room N. Customhouse, New Orleans, La., Nov. 25, 1908. Sealed proposals for fur-nishing and installing machines and engine in shon building at Burrwood, La., 109 miles below New Orleans, La., will be re-ceived at this office until 11 o'clock A. M., Dec. 26, 1908, and then publicly opened. In-formation on application. Lansing H. Beach, Lieut.-Colonel, Engineers.

FOR SALE
14-24-40 x 30 Triple Expansion Engine.
22-50 x 30 F. & A. Compound Engine.
3 Steam Windlasses.
2 Steam Steerers.
Surface Condensers—200 to 3,500 sq. ft.
Steam Driven Jet Condensers.
Steam Driven Blowers.
30 K. W., 50 K. W., 75 K. W. Light-
ing Sets.
6 Almy Boilers.
Fire and Wrecking Pumps — Diving
Gears.
MARVIN BRIGGS, Inc.
154 Nassau St., New York City.

PASSENGER STEAMER CHE-QUAMEGON. Built in 1903. Allowed 400 passengers. Triple-expansion en-gines. 175 lb. steam pressure. 125 ft. over all. 22 ft. beam. Electric lights. Search light. Steam steering gear. Draught, 8 ft. 10 in. Rated A1. Infor-mation and price apply to C. A. Webb, Traverse City, Michigan.

WRITE US FOR ANY BOOK ON ME-chanical Subjects. Book Department, The Penton Publishing Co., Cleveland.

TUG ARTHUR JONES FOR Sale, 16 x 18, 140 pounds steam, hull recently rebuilt and all in good work-ing order. E. M. Graves, 17 Com-mercial Bank Bldg., Cleveland, O.

Engineer Office, U. S. Army, Room N, Customhouse, New Orleans, La., Nov. 21, 1908.—Sealed proposals for furnishing and in-stalling ice machine, refrigerating and dis-tilling plant, in machine shop building at Burrwood, La., will be received at this of-fice until 11 o'clock a. m., Dec. 21, 1908, and then publicly opened. Information on application. Lansing H. Beach, Lt. Colonel, Engineers.

TWO HULL DRAFTSMEN wanted. Apply The Toledo Ship Building Company, Toledo, Ohio.

SAND SUCKER FOR SALE, IN operation for balance of season. Ca-pacity 250 yards or better. Reason for selling, business demands larger boat. Address E. C. Calvert, Detroit, Mich.

FOR SALE. ONE ROBERT WA-ter Tube Boiler No. 9, repiped last spring. One F. & A. compound ma-rine engine, 6 x 12 x 6. Built by the Marine Iron Works, Chicago, Ill. One Worthington Duplex Air Pump, 4½ x 3¼ x 4. One Worthington Duplex Boiler Feed Pump 3 x 1¼ x 3. Outfit practically as good as new and will be sold cheap. Address H. B. Larsen, Manistee, Mich.

WHIRLEY DERRICK WANTED in first-class condition, 50 to 60 ft. boom, capable of handling two-yard bucket of sand. Address E. C. Cal-vert, Detroit, Mich.

Howard H. Baker & Co.

BUFFALO, N. Y.

HATCH COVERS

Made of

Wilford's

Waterproof Flax Duck

WILLCOX, PECK & HUGHES

Average Adjusters Insurance Brokers
3 South William Street
NEW YORK

HULLS AND CARGOES

We place insurances in the most advantageous markets, and have unequalled facilities for procuring, in the inter-ests of our clients, the best obtainable rates and terms from the strongest Foreign and Home companies.

BRANCHES:

Cleveland Chicago Buffalo Minneapolis
Boston Seattle New Orleans

Represented by

C. T. BOWRING & CO., (Insurance) LTD.

Winchester House and at "Lloyd's", London

WE REPRESENT THE ASSURED

AMERICAN MANGANESE BRONZE COMPANY

SOLE MANUFACTURERS

**MANGANESE
BRONZE.**



**HYDRAULIC
BRONZE.**

WHITE BRONZE

U. S. GOVERNMENT COMPOSITIONS
INGOTS, FORGINGS, RODS, SHEETS
MARINE CASTINGS & PROPELLERS
UP TO 20,000 lbs. EACH.

99 JOHN STREET

CHICAGO, 552 FULTON STREET
CLEVELAND, 1010 WILLIAMSON BUILDING

NEW YORK

PHILADELPHIA, ARCADE BUILDING
BUFFALO, 29 ERIE CO. BANK BUILDING

Time and Distance Tables for Lake Ships

A set of tables showing the time required at different rates of speed, 8 to 15 miles an hour, to cover distances between all ports on the Great Lakes. A time saver to the vessel owner or vessel agent as well as captain or engineer. Send for it on approval.

Regular Price, \$1.00

A quantity of them, very slightly shelf-worn, will be sold, while they last, for

25c each

MARINE REVIEW,

Cleveland, Ohio

Great Lakes Dredge & Dock Company

RIVER AND HARBOR IMPROVEMENTS

Foundations, Bridges, Piers, Breakwaters,
Lighthouses, Tunnels, Pneumatic
and Submarine Work.

CHICAGO

DULUTH CLEVELAND SAULT STE. MARIE
AMHERSTBURG, ONT.

M. SULLIVAN

DREDGING OF ALL KINDS

THE REMOVING OF DEEP
WATER EARTH AND ROCK
A SPECIALTY.

721 West Ferry St.

BUFFALO, - - - N. Y.

G. H. Breymann & Bro's

CONTRACTORS FOR
PUBLIC WORKS

Dredging, Dock Building, Etc.

3, 6 AND 7 MARINE BUILDING
TOLEDO, OHIO.

C. H. STARKE DREDGE & DOCK CO.,

Contractors for Public Works.

DREDGING, PILE DRIVING,
— AND —
SUBMARINE PIPE LAYING.

Canal Street, West of First Avenue,

Milwaukee, - - Wisconsin.

NORTHERN DREDGE COMPANY

Dipper and Clam Shell Dredges Es-
pecially Equipped for Rock Work
and for Very Deep Dredging.

General Contractors on all
MARINE WORK

Providence Bldg., DULUTH, MINN.



Buffalo Dredging Co.

GENERAL CONTRACTORS
— ON —
SUBMARINE WORK

Office
D. S. Morgan Bldg.

BUFFALO, N. Y.

BUYERS' DIRECTORY

Advertisements can be found readily by reference to the Alphabetical Index.

AGENTS (Vessel and Freight).

Belcher, Fred P., Winnipeg, Man.
 Boland & Cornelius, Buffalo, N. Y.
 Douglas, G. L., Duluth, Minn.
 Elphicke & Co., C. W., Chicago, Ill.
 Hall, John B., Buffalo, N. Y.
 Helm & Co., D. T., Duluth, Minn.
 Hawgood & Co., W. A., Cleveland, O.
 Holmes, Samuel, New York, N. Y.
 Hutchinson & Co., Cleveland, O.
 Lake Transportation Co., The, Cleveland, O.
 McCarthy, T. R., Montreal, Canada.
 Mehl, Edward, Erie, Pa.
 Mitchell & Co., Cleveland, O.
 O'Connor, J. J., Port Arthur, Ont.
 Parker Bros., Ltd., Detroit, Mich.
 Richardson, W. C., Cleveland, O.
 Sullivan & Co., D., Chicago, Ill.
 Vance & Joys Co., Milwaukee, Wis.

ANCHORS.

Bowers & Co., L. M., Binghamton, N. Y.
 Upson-Walton Co., Cleveland, O.

ARCHITECTS (Naval).

Babcock & Penton, Cleveland, O.
 Curr, Robert, Cleveland, O.
 Ekstrom, G., Detroit, Mich.
 Kidd, Joseph, Duluth, Minn.
 Linch, Chas. S., N. A. & M. E., Philadelphia, Pa.
 Nacey & Hynd, Cleveland, O.
 Nevins & Smith, Chicago and Cleveland.
 Wilby, Carlton, Detroit, Mich.
 Wood, W. J., Chicago, Ill.

APPARATUS (Steering).

Akers Steering Gear Co., Chicago, Ill.
 American Ship Building Co., Cleveland, O.
 Chase Machine Co., Cleveland, O.
 Dake Engine Co., Grand Haven, Mich.
 Detroit Ship Building Co., Detroit, Mich.
 Hyde Windlass Co., Bath, Me.
 Sheriffs Mfg. Co., Milwaukee, Wis.

APPARATUS (Submarine Diving).

Morse & Son, A. J., Boston, Mass.
 Schrader's Son, Inc., A., New York, N. Y.

ARMORS (Submarine).

Morse & Son, Inc., Andrew J., Boston, Mass.
 Schrader's Son, Inc., A., New York, N. Y.

ATTORNEYS AND PROCTORS IN ADMIRALTY

Gilchrist, Albert J., Cleveland, O.
 Goulder, Holding & Masten, Cleveland, O.
 Hyner, P. D., Erie, Pa.
 Hoyt, Dustin, Kelley, McKeehan & Andrews,
 Cleveland, O.
 Jenkins, Russell & Eichelberger, Cleveland, O.
 Kremer, C. E., Chicago, Ill.
 MacDonald, Ray G., Chicago, Ill.
 Marshall, Alexander, Duluth, Minn.
 Shaw, Warren, Cady & Oakes, Detroit, Mich.

BAROMETERS, GLASSES, ETC. (Marine).

Ritchie & Sons, E. S., Brookline, Mass.

BARS (Iron or Steel—Hollow Stay-bolt).

Falls Hollow Staybolt Co., Cuyahoga Falls, O.

BEARING METALS (White Bronze).

American Manganese Bronze Co.,
 New York, N. Y.

BELLS (Engine Room Telegraph Call, Etc.).

Cory & Son, Chas., New York, N. Y.

BLOCKS, SHEAVES, ETC.

Boston & Lockport Block Co., Boston, Mass.

BOATS (Builders).

Drein, Thos., & Son, Wilmington, Del.
 Truscott Boat Mfg. Co., St. Joseph, Mich.

BOILERS.

Almy Water Tube Boiler Co., Providence, R. I.
 American Ship Building Co., Cleveland, O.
 Atlantic Works, East Boston, Mass.
 Briggs, Marvin, New York, N. Y.
 Chicago Ship Building Co., Chicago, Ill.
 Copeland Co., E. T., New York.
 (Copeland Scotch Improved.)
 Cramp, Wm., & Sons, Philadelphia, Pa.
 Delany, P., & Co., Newburgh, N. Y.
 Detroit Ship Building Co., Detroit, Mich.
 Fletcher, W. A., & Co., Hoboken, N. J.
 Fore River Ship Building Co., Quincy, Mass.
 Great Lakes Engineering Works, Detroit, Mich.
 Griscom-Spencer Co., New York, N. Y.
 Johnston Brothers, Ferrysburg, Mich.
 Kingsford Foundry & Machine Works,
 Oswego, N. Y.

Manitowoc Boiler Works, Manitowoc, Wis.
 Maryland Steel Co., Sparrow's Point, Md.
 Milwaukee Dry Dock Co., Milwaukee, Wis.
 New York Ship Building Co., Camden, N. J.
 Quintard Iron Works Co., New York, N. Y.
 Roberts Safety Water Tube Boiler Co.,
 New York, N. Y.
 Superior Ship Building Co., Superior, Wis.
 Toledo Ship Building Co., Toledo, O.

BOOKS.

Penton Publishing Co., The, Cleveland, O.

BRASS GOODS.

Michigan Lubricator Co., Detroit, Mich.
 Penberthy Injector Co., Detroit, Mich.

BRIDGES.

Scherzer Rolling Lift Bridge Co., Chicago, Ill.

BRONZE.

American Manganese Bronze Co.,
 New York, N. Y.

BRONZE (Manganese).

American Manganese Bronze Co.,
 New York, N. Y.

BUCKETS (Ore and Coal).

Brown Hoisting Machinery Co., Cleveland, O.
 Hayward Co., The, New York, N. Y.

BUOYS, BOATS, PRESERVERS, ETC. (Life).

Armstrong Cork Co., Pittsburgh, Pa.
 Drein & Son, Thos., Wilmington, Del.
 Kahnweiler's Sons, David, New York, N. Y.
 Lunding, A. P., New York, N. Y.
 National Cork Co., Brooklyn, N. Y.

BUOYS (Gas).

Safety Car Heating & Lighting Co.,
 New York, N. Y.

CANVAS.

Baker & Co., H. H., Buffalo, N. Y.
 Upson-Walton Co., Cleveland, O.

CAPSTANS.

American Ship Windlass Co., Providence, R. I.
 Chase Machine Co., Cleveland, O.
 Dake Engine Co., Grand Haven, Mich.
 Gillett & Eaton, Lake City, Minn.
 Hyde Windlass Co., Bath, Me.

CAPSTANS (Steam).

Chase Machine Co., Cleveland, O.
 Gillett & Eaton, Lake City, Minn.

CASTINGS (Brass and Bronze).

American Manganese Bronze Co.,
 New York, N. Y.
 Griscom-Spencer Co., New York, N. Y.
 Cramp, Wm., & Sons, Philadelphia, Pa.
 Fore River Ship Building Co., Quincy, Mass.
 Great Lakes Engineering Works, Detroit, Mich.

CASTINGS (Steel).

Otis Steel Co., Cleveland, O.

CEMENT.

(Iron for Repairing Leaks.)

Smooth-On Mfg. Co., Jersey City, N. J.

CHAINS.

Seneca Chain Co., Kent, O.

CHANDLERS (Ship).

Baker, Howard H., & Co., Buffalo, N. Y.
 Great Lakes Supply Co.,
 Buffalo, N. Y., and Duluth, Minn.
 Griscom-Spencer Co., New York, N. Y.
 Upson-Walton Co., Cleveland, O.

CHARTS.

Penton Publishing Co., Cleveland, O.

CIRCULATORS (Automatic).

Copeland Co., E. T., New York, N. Y.

CLOCKS AND CHRONOMETERS (Marine).

Ritchie, E. S., & Sons, Brookline, Mass.

CLOTH (Waterproof).

Bunker, E. A., New York, N. Y.

COAL (Producers and Shippers).

Hanna, M. A., & Co., Cleveland, O.
 Lorain Coal & Dock Co., Cleveland, O.
 Pickands, Mather & Co., Cleveland, O.
 Pittsburg Coal Co., Cleveland, O.
 Toledo Fuel Co., Toledo, O.

COMPASSES.

Ritchie, E. S., & Son, Brookline, Mass.

COMPOUNDS (Lubricating).

Cook's Sons, Adam, New York, N. Y.

CONDENSERS.

Great Lakes Engineering Works, Detroit, Mich.

CONTRACTORS (Dredging).

Breymann & Bros., G. H., Toledo, O.
 Buffalo Dredging Co., Buffalo, N. Y.
 Dunbar & Sullivan Dredging Co., Buffalo, N. Y.
 Great Lakes Dredge & Dock Co., Chicago, Ill.
 Northern Dredge Co., Duluth, Minn.
 Starke Dredge & Dock Co., C. H.,
 Milwaukee, Wis.
 Sullivan, M., Buffalo, N. Y.

CONTRACTORS.

(Pile Driving and Submarine.)

Buffalo Dredging Co., Buffalo, N. Y.
 Dunbar & Sullivan Dredging Co., Buffalo, N. Y.
 Great Lakes Dredge & Dock Co., Chicago, Ill.
 Parker Bros. Co., Ltd., Detroit, Mich.
 Starke Dredge & Dock Co., C. H.,
 Milwaukee, Wis.
 Sullivan, M., Buffalo, N. Y.

CONTRACTORS (Public Work).

Breymann Bros., G. H., Toledo, O.
 Buffalo Dredging Co., Buffalo, N. Y.
 Dunbar & Sullivan Dredging Co., Buffalo, N. Y.
 Griscom-Spencer Co., New York, N. Y.
 Great Lakes Dredge & Dock Co., Chicago, Ill.
 Starke Dredge & Dock Co., C. H.,
 Milwaukee, Wis.
 Sullivan, M., Buffalo, N. Y.